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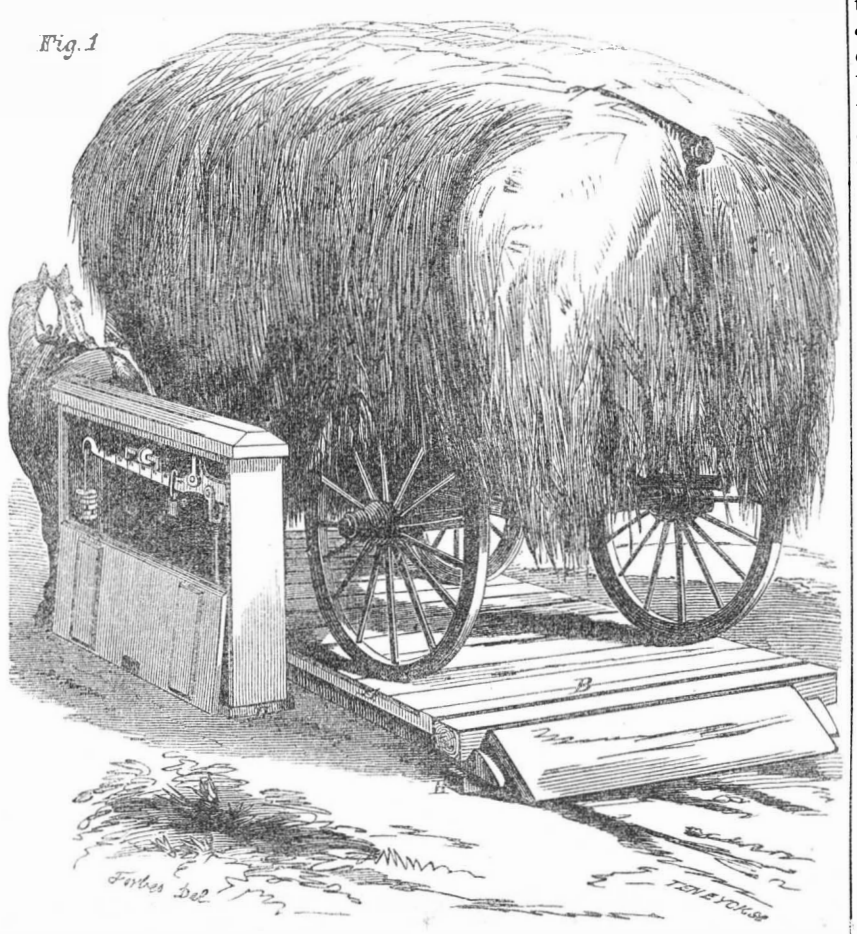
SAMPSON'S PLATFORM SCALES.

Fig. 1



Improvement in Platform Scales.

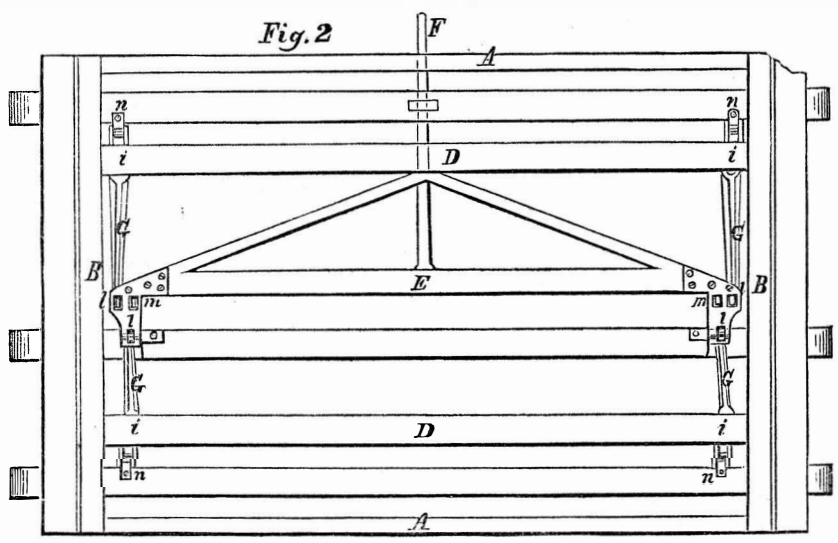
The annexed figures represent an improvement in platform scales, for which a patent was granted to Elnathan Sampson, on the 25th of July, 1854. This improved scale is adapted for railroad scales, hay scales, and for weighing heavy bodies or loads of any kind in warehouses.

Figure 1 is a perspective view of the scale used for weighing hay (or other loads) on a cart; figure 2 is a plan view of the platform frame of a hay scale, and figure 3 is a transverse section of a railroad scale. Similar letters refer to like parts.

The priciple feature of the invention consists in supporting the platform upon a series of short levers which extend transversely from the sides of the platform to near the middle of the same, and are there connected to a laterally vibrating lever which extends the whole length of the platform, and is connected to the lever of the scale beam, which arrangement obviates the use of trussed levers in constructing scales of the largest size; also obviating the necessity of having a pit in putting one up, thereby rendering such scales portable and convenient to be laid on the ground and used at once, and at any place. Another feature of the invention relates to the peculiar manner of connecting the platform to a series of transverse levers, by means of stirrups, *i*, figure 3, which have double concave auxiliary blocks, *k*, inserted between the bearing edges of the pivots of the levers, and the bearing edges of the stirrups which give free lateral and longitudinal motion to the platform without injury to the sharp bearing edges. A A are side pieces, and B B are the roadway pieces of the platform; D D are also side pieces, and C is a transverse piece, all united together as represented. The base of the scale may be made of pieces of timber, Q and R, framed together as shown in figure 3, and may have a suitable number of side and central supporting posts, *h h*, for the reception of the levers that suspend the platform. The outer ends of the transverse levers, G G, figure 3, are suspended to the series of outer short posts, *h h*, as follows:—A sharp-edged pivot, *n*, passes through an opening in the outer end of each lever, and rests in a concave in the top of the post, embraced by said opening. The inner ends of the transverse levers, G G, are connected to the laterally vibrating longitudinal lever, E, by links, *l l*, which connect sharp-edged pivots in the inner ends of the levers. G, to similar pivots located in the longitudinal lever, E, these pivots being in a longitudinal line with each other. The lever, E, is suspended in figure 3, to a series of central posts, *h'*, by means of sharp-edged pivots, *m*, which rest in the heads of the posts, but a central transverse lever and pivots, *h'*, may be dispensed with entirely on hay scales, as shown in figure 2, although they may be necessary on large scales, like those for railroads, in figure 3, but the manner in which the pivots are made, and the levers are hung, are the same as shown in figure 3, whether only two series of transverse levers are used, or an additional central series.

A short distance inside of the bearing pivot, *n*, in the outer end of each of the transverse levers, G, there passes through the elongated opening of each lever, a sharp-edged pivot, *s*, to which series of pivots the platform is suspended by the stirrups, *i i*, and the intermediate bearing block, *k*, the sharp-edged pivots, *o* and *s*, being arranged as in figure 3, namely, by each block, *k*, fitting loosely into the opening in a stirrup, *i*, with the under concave edge thereof resting upon the edge of pivot, *s*, and the edge of the cross bar of the stirrup resting in the concavity in the upper edge of said block. An opening in the shank of each stirrup at right angles to the opening that receives the block, *k*, receives a sharp-edged pivot, *o*, in the portion, D, of the side of the platform frame, and completes the connection of said frame with the system of levers. This enables the platform to swing, as it were, freely in a lateral and longitudinal direction upon sharp edges without any danger of straining or disarranging them; F is a lever connected with the longitudinal lever, E; it projects beyond the base of the scale at the side a sufficient distance to allow of it being

Fig. 2

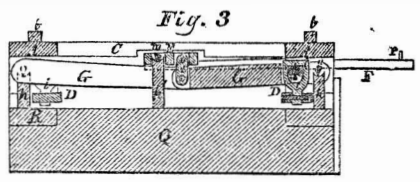


connected to the scale beam at P, in any of the known ways—the scale beam being the same as shown in figure 1.

When a load, as in figure 1, is placed upon the platform of the scales, it imparts motion to the lever, F, which operates the scale beam through the medium of the lever, E, and the transverse levers, G G. These levers are very sensitive and accurate in transmitting motion to the beam which indicates the weight of the load. The longitudinal vibrating lever is so short that it does not require to be trussed, to make it stiff, thus effecting a great saving in the material of construction. The platform does not require to be all planked over for a railroad scale, two rails, *t t*, as in figure 3, being sufficient, but it is shown planked in figure 1, for a hay or common road scale.

These scales can be constructed at far less expense than the old kind; no rural village, however small, should be without one, and any agriculturist who has a large farm will soon save the expense of such a scale, owing to its convenience for weighing loads of hay, &c. All kinds of grain, potatoes, and every other article of agricultural produce, should be sold by weight, not measure, and the time will yet arrive when laws will be made to carry out this system; and this scale, because of its portability and cheapness, will pave

Fig. 3



the way for such a revolution in the mode of buying and selling grain, and other agricultural products which are now sold by measure.

One of these scales is now on exhibition at the Fair of the Metropolitan Institute, Washington, D. C.

More information may be obtained by letter addressed to H. G. Judd, agent, Vergennes Scale Manufacturing Co., Vergennes, Vt.

New System of Gearing for Machinery and Railroads.

M. Minotto, Vice-Director of Telegraphs in Piedmont, has presented to the Society for the encouragement of National Industry, Paris, models and a description of a new system of gearing, called wedge gearing, which is proposed to replace, in a number of cases, the common toothed wheels. He proposes to apply it to railroads, the application consisting in the use of a grooved wheel, gearing upon a bar of iron placed in the middle of the track, to increase the adhesion of locomotives in the ascent of high grades. He also recommends its employment in the transmission of the rotary motion to the large main axes of propeller steamships, which must move rapidly to operate usefully upon the liquid.—[Exchange.

[For railroads this plan is not new. Jas French, of Old Point Comfort, Va., is ahead of him in its application to railroads. It is a most absurd idea to apply it to drive propeller shafts; its great amount of friction so necessary for adhesion on railroads, would use up too much power on steamships.

Justice to American Enterprise.

A new map of the Arctic Regions has been published by the British Admiralty, to which the names affixed to various localities by the American expedition sent out by Henry Grinnell, Esq., have been adopted; and in particular, Grinnell's Land, discovered by said expedition, is entered conspicuously on the map, it having been on a previous map of the Admiralty called Prince Albert's Land. This act of justice to the exertions of our countrymen, has been for some time strongly urged by the Rev. Dr. Scoresby, and other illustrious Arctic navigators.

Buoyant and Ball Proof.

A Mr. Clarkson has exhibited at the Underwriters' Rooms, Liverpool, a new material which he has invented, consisting of a combination of cork and wood, which he states, possesses many advantages over wood and iron, pure and simple, being lighter, stronger, and more elastic. His invention, he says, will be most useful in warfare, as he can construct boats that cannot be swamped; and with portable sides, easily moved and carried, which might protect boat's crews, and which cannot be penetrated by Minie balls fired at a distance of twenty yards, pieces of wood far thicker being broken in pieces when subjected to similar trial

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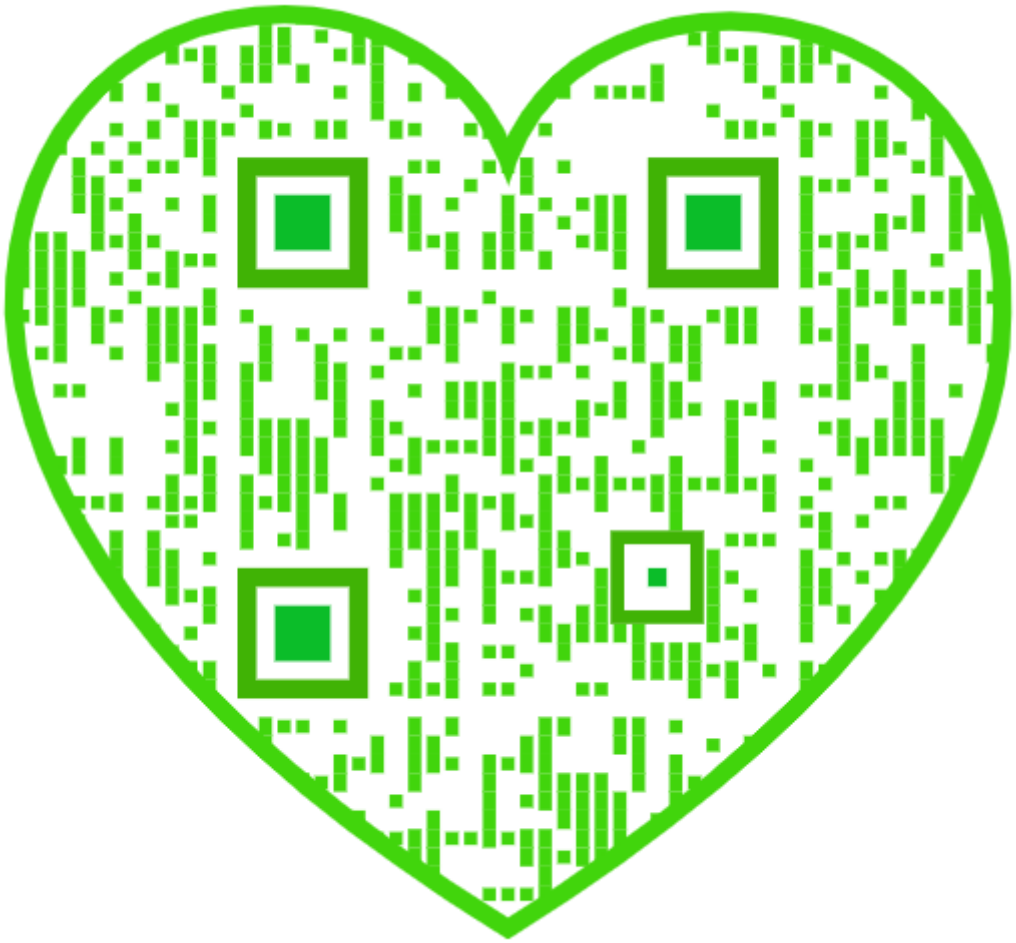

The Art of Dyeing—No. 7.

BLUE ON COTTON—In the last article we described the method of dyeing indigo blue on cotton by the cold vat. Blue color can be dyed by various plans and with different substances.

INDIGO LOGWOOD BLUE—The old-fashioned logwood blue is dyed by giving cotton a bottom of indigo and topping with logwood. A middling deep shade of indigo is first dyed on the cotton by either three or four dips in the blue vat, then the goods receive a weak sour (vitriol and water,) are washed, run through a tub of pyroligneous acid (mordaunt) then squeezed or wrung, then run through a tub of warm water, and wrung or squeezed for the logwood. The quantity of logwood given depends on the depth of shade desired. About three pounds of logwood for every ten pounds of cotton, makes a heavy topping. The color has a deep coppery blue appearance, like a very rich indigo color, but the logwood being fugitive it soon fades. The goods are generally raised with alum—for an *alternate*—in the logwood, after receiving five turns in the logwood liquor; with three more turns they are fit to be lifted out, washed, squeezed, or wrung, and dried.

LOGWOOD COPPER BLUE—Take the liquor of five pounds of logwood well boiled, and two ounces of the sulphate of copper dissolved, and put them into a tub for ten pounds of cotton. Enter the goods and handle well by turning for fifteen minutes. Lift them out then, and enter them into a tub of clean cold water, into which a quart of urine has been stirred, and then handle the goods in this for fifteen minutes, take out, wash, squeeze or wring, and dry. This is a very fugitive color, but it will answer very well for carpet rags.

COPPER BLUE—This color is dyed on cotton, by repeated dips, in a strong solution of the sulphate of copper, then in a vat of caustic ley. It takes about three pounds of the sulphate of copper to make a moderate deep blue—sea blue—it is a tedious color to dye; it stands washing well, and is of a peculiar tone—very chaste for gingham summer patterns.

CHINA BLUE—This is a light blue shade, and is given to cotton by neutralizing the sulphate of indigo with the acetate of lead. It will not stand the action of an alkali, but is a very clear toned color. Some neutralize the sulphate of indigo from chalk, but the sugar of lead is better, though dearer. This makes a very fine paste blue when thickened with gum, for calico printing.

The sulphate of indigo is made by feeding gradually ground indigo—the best quality only should be used—into pure sulphuric acid, and stirring up until all the indigo is dissolved. Five pounds of vitriol requires one pound of indigo, which is ground in a mortar, and sifted through a fine brass wire sieve.

ROYAL BLUE—This color until within a few years, although well known, was seldom dyed on cotton, because it was so expensive and difficult to make it dark. For many years it was known by the name of "Prussian bue." It is dyed with the nitrate of iron, logwood, salts of tin, and the prussiate of potash.

Take three tubs and make the first up with a strong salution of the nitrate of iron, (prepared by dissolving clean iron hoops slowly in aquafortis) about 5° in a Twad. hydrometer, and handle the cotton in this for fifteen minutes; then lift, and squeeze or wring. Enter again into a tub of logwood liquor very strong, into which has been added a solution of the crystals of tin, handle in this for ten minutes, then lift, wring or squeeze. Enter again into a clean tub containing a solution of the prussiate of potash, and handle in this for ten minutes, then lift and add some of the muriate of tin, and the oil of vitriol, enough to change the liquor from a bitter to a slightly sour taste, enter the cotton and give five turns, then lift up, wash well, and wring or squeeze for drying. This process makes a deep rich blue color, and is nearly as permanent as an indigo blue. For ten pounds of cotton it takes four pounds of logwood, one of the crystals of tin, and one of the prussiate of potash. Light shades of blue can be made by using less dye stuffs, and a weaker solution of the nitrate of iron; and for very light blues no logwood or crystals of tin are used, simply the two tubs—the nitrate of iron, and the prussiate of potash. For very light blues, the cotton must be bleached. Some use the crystals of tin in the iron liquor for light blues; it is best when this is done, if logwood is used, always to give some muriate of tin for raising along with the vitriol, in the prussiate of potash tub, as has been described, for the deep blue.

ROYAL BLUE ON SILK—This is dyed in the same manner exactly as on cotton. It will always be understood that the cotton and silk have been prepared by cleaning, to receive the dye, as was described in article 1.

China blue is dyed on silk with the sulphate of indigo, but it is a very fugitive color, it can be washed out with warm water, and even rain washes it off.

FAST BLUE—A very fast blue can be dyed on silk, by giving a bottoming of archil, then topping off in a *woad vat*, or a clear sharp, strong, indigo vat, used for dyeing cotton.

Very little logwood must be used in dyeing silk with iron and prussiate of potash.

Dyeing woolens blue in our next.

New Waterproofing Process.

The following is the specification of a patent recently obtained in England, by Henry B. Barlow, of Manchester, published in the last number of *Newton's London Journal* as a communication, from which we infer that it is a French improvement. It is an important and useful process.

This invention consists in a mode or modes of waterproofing and finishing certain textile fabrics and yarns made of wool, silk, hair, and such like animal substances, or a mixture of all or any of those substances with cotton, flax, or such like vegetable matters, or any of those materials with other fibrous materials, by rendering them, to a certain extent, repellant of water, and imparting to them a finish of a lustrous or metallic appearance. To effect this purpose, the fibers of the fabrics or yarns are impregnated with a salt or a compound of a metal; one of the following being preferred:—Acetate, nitrate, or chloride of copper; acetate and nitrate of lead; nitrate and acetate of bismuth, or any other salts or compounds of those metals except the sulphates. The fabrics or yarns so impregnated are then subjected to the action of steam, charged or mixed with sulphuretted hydrogen gas, or other volatile compound of sulphur. In order to impregnate the plain, dyed, or printed fabrics or yarns with one of the above-named acetates, nitrates, and chlorides, or other salt or compound of the metals aforesaid, the goods are immersed in a bath containing a solution of any of the above-named acetates, nitrates, and chlorides, or any other salts or compounds of the above metals, of a specific gravity of from one-eighth of a degree to three degrees of Twaddle's hydrometer. If the solution be heated, the fabric or yarn will be more speedily impregnated; but some description of printed or dyed goods will not bear the application of heat without injuring the colors; and in such cases, therefore, the solution must be used cold, or at a temperature sufficiently low to avoid injury to the color or colors—the time of immersion being proportionately lengthened.—When the solution is heated to a high temperature (say about 200° Fah.,) and the goods are not very thick, a sufficient impregnation will generally be effected in a few minutes: but if the solution be cold, or the goods very thick, it may be necessary to continue the immersion from two to three hours, to insure a perfect impregnation. Instead of simply immersing the fabrics or yarns in the solution, mechanical action or agitation may also be applied, for the purpose of expediting or insuring an uniform impregnation of the whole of the goods immersed. After impregnation, the fabrics or yarns are rolled or pressed, in order to deprive them as much as possible of the superfluous solution which they contain, and prevent waste.—They are then washed; and, afterwards, the water is expressed from them by rollers, a press, or a hydro-extractor. If the goods be thin or fine, or of a delicate color, they should be partially dried before being subjected to the action of sulphuretted hydrogen, or any other volatile compound of sulphur, for the purpose of promoting a more uniform action of those agents.

If it be desired to impart a water-repellant property, or finish of a lustrous appearance to some parts only of the plain or previously-dyed fabrics or yarns, that object may be effected in two modes; by which also a pattern or ornamental appearance, or variety of effect, may be produced. According to one of these modes, the plain or previously-dyed fabrics or yarns are first impregnated with any of the acetates, nitrates, and chlorides of copper, lead, and bismuth, above named, or any other salts or compounds of those metals, except the sulphates, and washed, pressed, and dried in the manner above described, by means of printing-blocks or rollers, or any other convenient means. Those parts of the fabrics or yarns which are not to be rendered water-repellant or to have a lustrous appearance, are covered, by printing blocks or otherwise, with some material which will protect them from the action of sulphuretted hydrogen, or any other volatile compound of sulphur, during the operation hereinafter described. This protecting material may be British gum, or any other material sufficient to afford the requisite protection, and made up into a paste of about the same consistence as the printing colors used in printing textile fabrics; the fabrics or yarns being then dried, will be ready to be subjected to the action of the steam and sulphuretted hydrogen, or any other volatile compound of sulphur as hereinafter described. The other of these two modes consists in applying an acetate, nitrate, or chloride, or any other salt or compound of the above named metals, to those parts of the surface of the plain or previously-dyed fabrics or yarns which are intended to be made water repellant, or have a finish of a lustrous appearance. This is done by mixing up the salt or compound of the metal intended to be used with a small quantity of British gum, or any thickening substance, to about the same consistence as the printing colors above-mentioned, and then, by means of printing blocks, printing rollers, or other convenient means, impressing a portion of the mixture of salt or compound and gum or thickening upon the parts to which the lustrous finish is to be imparted. The fabrics or yarns being then dried, are ready to be submitted to the action of the steam and sulphuretted hydrogen, or any other volatile compound of sulphur. Plain fabrics and yarns, intended to by dyed or printed with any color or colors, may be dyed with, or the colors may contain or be composed in part of, any of the acetates, nitrates, or chlorides of copper, lead, or bismuth, or any other salts or compounds of those metals, except the sulphates. The plain fabrics or yarns which have been dyed with the acetate, nitrate, chloride, or other salts or compounds of copper, lead, or bismuth, except the sulphates, are then to be subjected to the action of sulphuretted hydrogen, or any other volatile compound of sulphur and steam, for the purpose of decomposing or acting chemically upon the metallic acetate, nitrate, chloride, or other salt or compound with which they may have been dyed—or enter into the composition of the coloring matter fixed thereon, and so imparting a water-repellant property, or bright, lustrous, or glossy finish to the colors or fibers of the fabrics or yarns. The process of producing a metallic sulphuret on or in the yarn or fabric may be effected by enclosing the yarn or fabric in a steam chest or chamber, and then introducing steam impregnated or mixed with sulphuretted hydrogen, or any other volatile compound of sulphur; or the sulphuretted hydrogen and steam may be introduced without first mixing them. The steam or mixture of sulphuretted hydrogen, or any other volatile compounds of sulphur and steam, should be injected into the chest or chamber until the requisite chemical action has been produced, which will generally be effected in from five to thirty minutes. The sulphuretted hydrogen, or any other volatile compounds of sulphur, may be applied. The fabrics are rolled together in a wrapper round steam cylinders, such as are usually employed in print-works for steaming goods, the sulphuretted hydrogen gas being introduced into the center of the cylinder, together with the steam; or the steam itself may be impregnated with sulphuretted hydrogen, or any volatile compound of sulphur, previous to its introduction into the cylinder: or round the cylinder, together with the wrapper, is rolled a piece of flannel or calico, moistened with a solution of an alkaline sulphuret, or any other sulphuret or compound that will yield volatile compounds of sulphur or sulphuretted hydrogen; but it is preferred to use one of the sulphurets of potasssium, sodium, ammonium, calcium, magnesium, barium, or strontium, and on such saturated cloth to place another wrapper of flannel or calico, and then the fabric to be operated upon; all these being rolled round the cylinder at the same time. The whole is then covered with a thick wrapper of the above materials, and submitted to the action of steam, during a space of time varying from five to thirty minutes. The fabrics or yarns may then be washed, dried, and treated so as to prepare them for the market, according to the purpose to which they may be intended to be applied.

The Prizes—Mechanics' Institute.

MESSRS. EDITORS—I should have acknowledged the receipt of the $100 by express, yesterday, but I had not time. Accept my thanks. I will still continue to solicit subscribers to your paper as long as I can lift a foot or raise a voice. The Board of Directors of the Institute has unanimously agreed to appropriate the $100 for books on mechanics. GEORGE AINSLIE.

Louisville, Ky., Jan. 25, 1855.

We announce the following decision in regard to the suspended prizes:—

H. B. Nightingale, Doylestown, Pa., and W. Hart, Philadelphia, having each sent 45 names, are each entitled to one-half of the 7th and 8th prizes—$37 50. 10th prize for 35 names, $25 to S. M. Bullard, Boston, Mass. J. Garst, Dayton, Ohio, and C. Davis, Troy, N. Y., having each sent 30 names, are each entitled to one-half of the 11th and 12th prizes—$17 50. This announcement will give satisfaction, we doubt not, to all parties interested, and those who have not already received their money, can have it at any time, upon sending their orders.

Wire Fences.

MESSRS. EDITORS—Will you or some of your intelligent readers confer a favor on us residents of the fertile and extensive prairies of Texas, by imparting through your columns the cost, delivered at the port of Lavuca or Indianola, of an iron fence five feet high, and an effectual barrier to hogs and cattle? I want about four hundred yards as an experiment, and if it can be afforded cheap enough, and prove a good fence, an immense amount will be purchased in this region, around Lavuca Bay. Yours, &c.,

S. S. REMBERT.

La Grange, Fayette Co., Texas.

[Our correspondent lately left Memphis, Tenn., as we notice in the papers, and it is not improbable that some of his friends in that place may be glad to learn his whereabouts.

Law Regulating the Sale of Coal.

A bill has passed a third reading in the Senate of Massachusetts regulating the sale of anthracite and bituminous coal, which requires it to be sold by weight, two thousand pounds avoirdupois to the tun. The coal must also be weighed before delivery, by a sworn weigher, under a penalty of thirty dollars.—[Exchange.

[We hope this bill will pass. It is a good one and much needed in New York, as well as in Massachusetts

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For the Scientific American.

Obituary of Simeon L. Spofford, Esq.

Simeon L. Spafford, the subject of these remarks, died at Philadelphia on Sunday morning, 28th January. At the time of his death he was the able and efficient superintendent of the Philadelphia, Wilmington, and Baltimore Railroad. The prominent position the deceased has occupied in connection with the railroad interests of our country, renders it proper that something more than a passing notice should be given of his departure from among the living.

Mr. Spafford commenced the study of civil engineering in the office of Samuel M. Felton, Esq., then of Charlestown, Mass., now President of the Philadelphia, Wilmington, and Baltimore Railroad. His early career was distinguished by close application to study, and a disposition to excel in whatever he undertook. With a strong love for the study he was pursuing, it is no matter of surprise that he soon stood at the head of a very large class of young men, associated with him, and having the same profession in view.

After leaving the office of Mr. Felton he was employed in making surveys of and constructing several roads, amongst the most prominent of which may be mentioned the Vermont and Massachusetts, the Troy and Boston, the Alabama and Tennessee, and the Cincinnati, Hamilton, and Dayton. After the opening of this last-named road, he became its chief engineer, a position he occupied with great acceptance until called to occupy the position he held at the time of his death.

Mr. Spafford was the originator of several very useful inventions connected with the speed and safety of railroad traveling which have distinguished him as one of the first mechanics of the times. Amongst these may be mentioned a safety signal for drawbridges, now in use on all the bridges of the road of which he was Superintendent, also a safety switch, a truss for roofs, of great simplicity, cheapness, and strength, and a wooden bridge which dispenses with iron rods for trusses. At the time of his death he was employed in making a model of a bridge on this plan, with a view to constructing one across the Susquehanna at Havre de Grace, at which place the company have recently made the necessary surveys preparatory to erecting a bridge for the use of the road, purposing to dispense with the boat which has long been used at that point for the conveyance of passengers across the river.

Mr. Spafford was a mathematician of no ordinary powers of mind. He never encountered a problem that he did not thoroughly solve, and his services in this capacity were sometimes called into requisition by those who have reaped the reward of his labors, taking honors upon themselves that justly belonged to him.

The several inventions of which he was the originator are sufficient proofs of his mechanical ingenuity. Added to this was a quickness of perception, and a readiness to apply, that rendered his services specially valuable in cases of emergency. This was evinced in the recent destruction of the drawbridge at Grays Ferry across the Schuylkill. It was predicted and even announced that the bridge would be impassible for weeks, but through the ready efforts of Mr. Spafford, only two days elapsed before the trains were running again with their accustomed regularity. It was in this department of mechanism that he may be said to have excelled. In bridge masonry, and in the construction of bridges, he had no superior, and he has left many of these monuments of his mechanical ingenuity on the roads with which he was connected. Mr. Spafford was a useful citizen, a faithful officer, an affectionate husband, a kind father, a warm and sympathizing friend, indulgent even to a fault, and it is believed he had not an enemy in the world.

He was a leading spirit in whatever circle he moved. The common consent of his fellows assigned him the position of a leader, as a just reward due to his merits, without any effort on his part to reach that distinction. He was naturally a man of a modest and retiring disposition, and of strong domestic attachments.

Mr. Spafford was a native of Springfield, Vt., and died at the early age of thirty-five years. His remains have been temporarily deposited in Woodland Cemetery, on the banks of the Schuylkill, preparatory to their final removal to Northfield, Mass., the residence of the friends of his young and bereaved widow. His disease was the typhus fever in its most malignant form, and terminated his useful life after a brief illness of only fourteen days.

Many have lived on earth to the full measure of their "three score and ten," and have even gone down to the grave without leaving a single monument of their usefulness behind them. Not so with the subject of these brief remarks. His was a life of great activity and usefulness, and if "that life is longest which best answers life's great end," then may it in truth be said of our friend, that life's purposes in him were all fulfilled, and that he was ripe for immortality. F.

Notes on Newfoundland.

MESSRS. EDITORS—Probably some of your readers have never read a letter from this desolate shore. Science led me here, and I feel under obligations to send you at least an outline of my researches in this comparatively unknown region.

This Island is called Newfoundland by the Yankees, Newfoundland by Nova Scotians, and Newfoundland by the resident English. Strange ideas people have of it; some think it a barren rock; others a miserable heap of sand, or bar formed at the embouchure of the St. Lawrence valley. One person asserted there was not wood enough on the island to switch a cat; and another of like dimensions thought the great Bank of Newfoundland the *placer* of the codfishers. But circumnavigate the island within sight of its rocky shore, and you would imagine it the Acropolis of the world. Paddle up the river of *Exploits*, and glide down the mountain torrents, the *Humber* and the *Codroy*, dig into its lofty mountains, and traverse its long forests of fir trees, rivalling the pines of Oregon, and you will believe yourself in a continent of untold resources.

The extreme length of Newfoundland, from Cape Race to Cape Norman, is 5½°; breadth from Cape Spear to Cape Anguilla, 6° 51 miles; and circumference about 1000 miles. Its outlines are generally parallel to the strike of the rocks. The hills, valleys, lakes, and bays, run N. E. and S. S. W. There is evidence that the island is rising, corresponding to Greenland, which is sinking. The peninsula of Avalon is of a slate formation; the interior is mostly primitive, and the western part consists of secondary rocks of the carboniferous series. St. John's and Placentia are the principal emporiums. The former city has a fixed population of 10,000; at some seasons there is twice that number. The entrance to the harbor is very narrow but deep; on either side is a fortified hill 800 feet high. The system of trade here is very bad; half a dozen merchants constitute a chamber of commerce, and allow no prices current to be published. On a site overlooking the city and harbor, is being built a splendid cathedral, to cost £80,000. The stone for the pillars and front were transported from Dunleary, Ireland. The hight of the ceiling above the floor is sixty-five feet. The organ, presented by Dr. Mulloch, is the eleventh in size in the world, having fifty stops. Near by is a chalybeate spring, the sp. gr. of which (at 62° F.) is 1·000016. The city is lighted with gas, the materials of which come from Scotland. Seven newspapers are published, but no part of the Island seems to be very literary. For more than two centuries Newfoundland has been the codfish depot of nearly two hemispheres. Great Britain, France, and the United States have over 3000 craft engaged in this piscatory enterprise. The French alone have 250, and the right of fishing and drying nets on the northern and western shores, and in the Gulf of St. Lawrence, not within nine miles from any British coast. They have also as military stations St. Pierre and Minquilon, but no fortifications are allowed, nor more than fifty soldiers. The English erred in ceding to them the western coast, as it is the very best of the ground; but the Americans are fast driving both parties from the field by their superior skill. The French pay annually £2000 for bait. The kinds most in use for catching cod, are squid (cuttle-fish,) lance, herring, and clams. April is the month for seals (common and hooded;) they are caught in nets or knocked on the head. May is the time for herring, June for halibut (Plueronectidæ,) a fat, flat fish, having both eyes on the same side of the head, and the cod, the principal species of which is the Gadus Morrhua; July for salmon and trout; and September for mackerel. As might be supposed, everything smells, tastes, and feels fishy. Nearly all animals from the cow to the hen eat fish. The viscera are made into heaps for manure. Of the mammalia of the Island, some species are quite numerous, while others have scarcely a representative. The Carriboo or American Reindeer (Cervus elaphas) is sometimes found in herds of a thousand. It resembles the elk in form and the ox in size, and feeds on the deer-moss of the barrens; beavers, land otters, foxes of all colors, long-legged black bears, weasels, martens, minks, wolves, hares, small bats, large rats, and wild cats, are frequently met with. The bear here is very shy; but the same animal in Cape Breton, only 65 miles distant, attacks man and beast. Musquitoes, midges, and black flies are wofully plenty; but not a snake, frog, toad, or squirrel can be discovered. St. Patrick has evidently been here. Of birds, we find the sea-eagle, fishing, pigeon, gos, and sparrow hawks, numerous owls, crow, raven, grouse, eider-duck, goose, loon, skerron, cormorant, and curlew. The botany of some sections is very rich in new and rare varieties. In the marshes is a fruit like a strawberry, of a bright yellow when ripe, called bake-apple from its flavor; it makes a delicate preserve. It has been stated by British geologists that no fossils are to be found on the Island but the coniferæ of the coal measures; but I have seen a carboniferous limestone on the shore of this bay full of animal remains. The temperature rarely rises above 79°; in August it averages 54°. February is the coldest and most stormy month, July is the warmest, and withal the most disagreeable, for the flies are intolerable. Winter is the time to travel; for then the impassable "tucking bushes" or spruce hedges are covered with snow, forming vast plains, over which the Indian, with his snow shoes, will walk a hundred miles a day. Thunder and lightning are rare inland. South and south-west winds are the most dangerous, and quite prevalent, so much so that it is not every day that one can get out of this bay into the gulf. Indeed, sometimes vessels are detained six weeks before an easterly wind will clear them. Sandy Point, at the head of St. George's Bay, is a settlement of about a hundred families, mostly French, from Cape Breton. I think it is the best herring ground about the Island; cod are also caught to some extent. Some of the latter will weigh when ready for the market, over a quintal, and one was taken off Cape St. George, which, when dressed, filled a barrel. Halibut have been caught for ballast at the same place. The fish are exported chiefly to Halifax, via Sidney or Pictou, according to the wind. The Red Indians, the aborigines of the Island, were once a very powerful race, but they have been extinct over twenty years. They received their name from the custom of painting themselves with red marl, which abounds along the coast. They were driven out by the present incumbents, the Micmacs or Shannocs, who crossed over from Cape Breton, and resemble in many respects the Esquimaux of Labrador.

Politics seem to be based on religious distinctions. The government is vested in the Governor General, who receives £12,000 per annum, but gives the people very little law. There are only eight or nine constables in the whole Island. The one stationed at this place has jurisdiction over the western half, yet with an Indian guide, traveling is perfectly safe. And although society here is not the most agreeable, if any among your readers are fond ot the novel and the rare, they will make a profitable tour through the wilds of Newfoundland. J. O.

St. George's Bay, 1855.

(For the Scientific American.)

Overhead Stove Pipe in the School Room.

It is common in school-houses, to use considerable overhead pipe from the stove, to increase the means for the radiation of heat. But, in my opinion, heat thrown out, overhead, is of no advantage in making a room comfortable, and does much injury to the health, producing a dull, irritable feeling of the head, successive returns of sick headache, loss of appetite for food, and a gradual decline in strength of body and vigor of mind. The sympathy is such between the head and stomach, that very few persons can be any length of time, where heat is radiated directly upon the head, without the digestive organs being affected, and especially such as are predisposed to a dyspeptic habit. The feet may be kept warm, but the head must be cool, to enjoy health of body and vigor of mind. It is not uncommon for teachers and scholars to complain that their school labors wear upon their health; but it is not the study and teaching that impair it, rather these, properly conducted, in a well regulated room as to heating and ventilation, may become auxiliaries to preserve health.

In my own school room, the long reach of horizontal pipe overhead, I have had taken down and placed a short distance above the floor, extending from the floor to the perpendicular that goes up to the chimney. It has proved to add much to the comfort of the room; the oppressiveness that was before felt from the heated air, is now done away. Every schoolroom should be freed from overhead stove pipe, except what is required to reach vertically to the chimney.

A TEACHER.

Vernon Center, N. Y.

Hydrodynamics.

MESSRS. EDITORS—I do assert that the science of hydrodynamics is not understood, or if it is understood, will you lay before your readers the following interrogatories:

First, what rule is known that will give the upward pressure of a Parker water wheel, of all diameters needed under all falls in use in the United States, with all sizes of issues necessary, so that the wheel and shaft will have no more metal than is absolutely necessary to overcome this lifting force when running at maximum in a horizontal water wheel? Second, experience informs me that the water leaves the issue of a Parker water wheel in a line parallel with a secant, and the course or current of the water is changed into an acute angle of 45°, the circle of the outer side of the column of water being the base, square the radial measurement of the issue, its hypothenuse being the distance the water passes, while the wheel must run the length of the hypothenuse of the inclination of the bucket, (so called) radially, the periphery of the wheel being the base of the inclination of the bucket, when the wheel runs at maximum. The wheel runs one way and the water an opposite direction. How, or in what manner, is this bronght to act?

The difference of the two velocities is as 17·76 feet is to 26·54 feet. These velocities are based on the best authority of men of science, by experiments.

These two questions are of great importance, particularly the former. Thirdly, will the same amount of upward pressure be in a wheel of the same dimensions, the vertical motion of the water being formed by a helical sluice, or merely with a cylinder?

An answer by any scientific gentleman is solicited, as the solutions are much needed.

JAMES SLOAN.

Sloans' Mills, Floyds Fork, Shelby Co., Ky., January 1855.

The electric conductibility of platinum is 2½ millions of times as great as that of a solution of the sulphate of copper, while the conducting power is only 0·0025 of the same.

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New Inventions.

Implement for Boring in the Earth.

The claims on another page, for an improvement on an implement for boring wells and holes in the earth, for which a patent has been granted to I. J. W. Adams, of Sharptown, Md., embrace a peculiar and valuable feature for boring. To the lower end of the shank of the auger there is secured a bail of a semi-circular form, to the lower ends of which there is attached by pivots a cylindrical vessel, having a spur at the center of its bottom, and a cutter which extends from this spur to the edge of a vessel, also an opening in the same, thus forming a hollow auger or borer. This auger has a semi-circular handle, to one side of which is attached a semicircular spring, having a projection on its outer surface. This projection sets in a cavity in the under side of the bail, when the auger is in an upright position, and keeps the auger in place. The auger is rotated by handle, and it bores into the earth until it is full, when it is drawn up, then by simply pressing upon the knob of the spring described, the hollow auger discharges its contents, and the auger then re-adjusts itself for action, by simply relieving the spring from pressure, and is fit to continue the boring operation until the hole is completed.

Improved Straw Cutter.

The improved straw cutter of G. L. Squier, of Chicopee Falls, Mass.,—the patent claims of which are in this week's list, on another column—is peculiar in its construction and operation. It has two shafts, one of which receives a more rapid motion than the other; upon one is placed circular or disk cutters, but upon the other both circular cutters and finger plates. These finger plates act as follows:—The shafts of the knives have to be made long so as to lay in the straw longitudinally with the shafts, and the fingers whipping round draw down the straw to the action of the rotating knives, which thus cut like circular shears. The cutters can be set by nuts at any distance apart, so as to cut fine and coarse, as may be desired. It cuts straw, cornstalks, &c., with great rapidity, and the cutters can be sharpened with great facility.

Slate Cutting Machinery.

The annexed figure is a perspective view of a machine for cutting and trimmiug slate, for which a patent was granted to Asa Keyes, of Brattleborough, Vt., on the 2nd of last month.

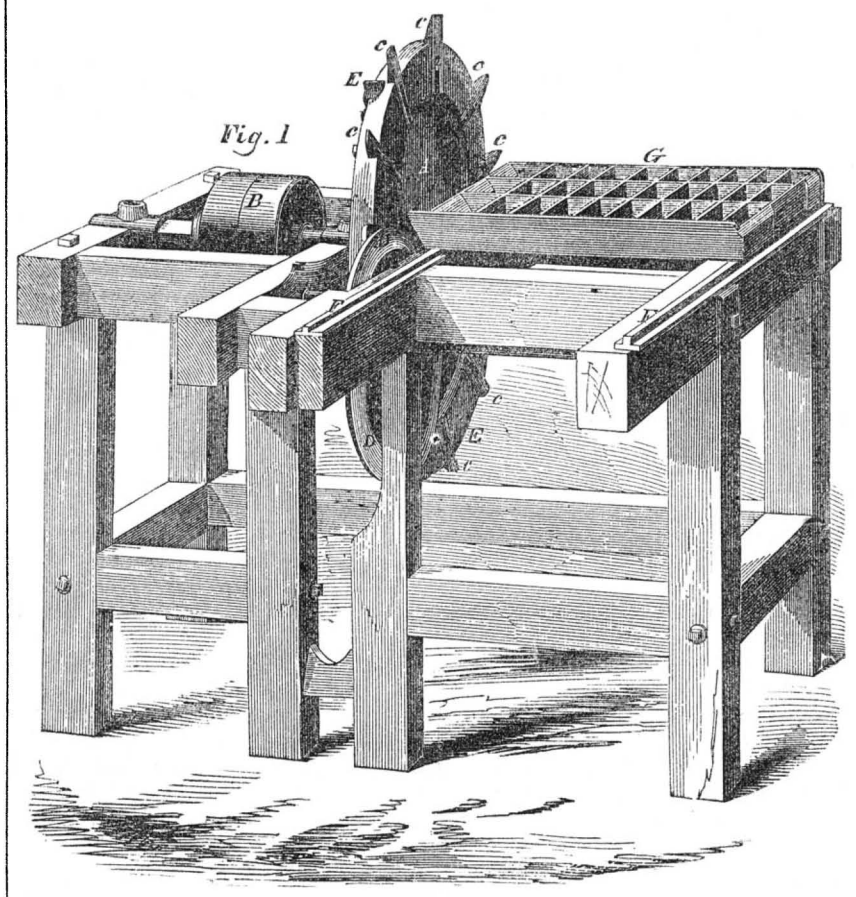
The nature of the invention consists in applying a rapid succession of stone hammer blows, each of which beats off a minute piece of the slate, while it, the slate, is carried along by a carriage on ways.

A is a heavy cast iron rotating wheel, mounted in suitable bearings, and propelled by a pulley, B. Into this wheel, and projecting a little beyond its periphery, are fastened firmly the requisite number of hammers or cutters, *c c c.*

Parallel with, and very near to the wheel, A, is another wheel, D, called the dog, the purpose of which is to support the under surface of the slate opposite and near to the point where each blow is given; this dog wheel turns freely on its axis. The carriage, G, on which the slate is laid, is furnished with friction rollers, which trunde it on ways, F F. The carriage may be of cast iron, and it is well to make it of open work like small window sash, for the purpose of allowing chips and dust to fall freely through it. The dog wheel is also of cast iron. It should rise a little higher than the upper surface of the carriage, to insure its contact with the slate. This dog may be a stationary, fixed segment of iron, over which the slate shall slide when the carriage moves, but a wheel which shall revolve is preferred whenever the adhesion or friction of the slate is sufficient to turn it. The hammers or cutters are made of wrought steel, or of cast iron provided the latter is chilled at the outer end which comes in contact with the slate. As these hammers or cutters have narrow faces, and might have a strip of waste material which would run sgainst the cast iron wheel and impede the motion among them, two or three flat pieces of iron, E, are inserted, to break off any such tongue of waste slate.—These flat head pieces should not project so far beyond the periphery of the wheel as do the hammers or cutters. The wheel which carries the hammers or cutters is heavy, and this weight of the wheel not only furnishes the momentum of the individual blows of each hammer, but supplies the purpose of a fly wheel to the machine. The hammers are held into mortises cast in the wheel, by bolts and nuts. The carriage may be shoved by the operator by hand, or it may be geared to be carried by the main axis. If this latter mode is pursued, it will be well to so proportion the feed to the revolutions of the main axis that each hammer will strike on to the slate about one-eighth of an inch, or one quarter, when the stone to be cut is of the thickness of roofing slate.

MACHINE FOR CUTTING AND TENONING SLATE.

Fig. 1



The advantages of the circular dog wheel are important, for if the slate in procees of trimming bears upon a level rest, the unevenness of the slate will occasion it frequently to break and waste the material, but in this machine, the slate, however uneven, is always in contact with the circular dog at the point where it receives the blow of the hammer or cutter, and thereby the frequent breaking of the slate is avoided.

Fifteen of these machines are used by the New England Mining and Quarrying Co., at Guilford, Vt. They have greatly reduced the cost in trimming and cutting of slate.

More information may be obtained by letter of Mr. Keyes, at Brattleboro', Vt.

BEARINGS FOR LOOSE PULLEYS.

Fig. 1

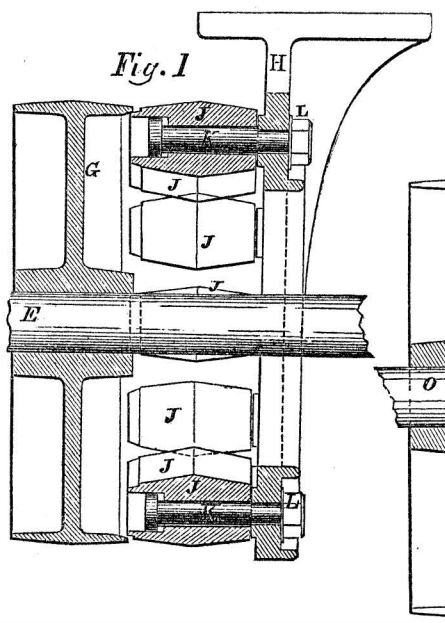
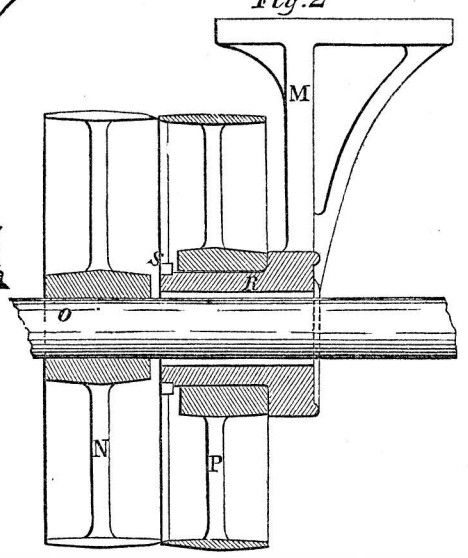


Fig. 2



The annexed engravings represent an improvement in bearings for loose pulleys, for which a patent was granted to the inventor, Wm. Campbell, and to E. W. Shippen, as an equal partner in the patent, on the 24th of last October.

Figure 1 is a vertical section, and figure 2 is also a similar section, the two figures representing the two modes of attaining the same object.

The object of the invention is the placing of a loose pulley and hanger beside a driving pulley on a line shaft, or on any intermediate shaft bearing the same relation to a lathe or other machine, to be detached as a line shaft, whereby is obviated the continued wear attendant upon the loose pulley, shafting, and belts, when a lathe, or loom, or other machine, driven in from the line of shafting, is not running. The loose pulley and hanger having an axis may be made to revolve independent of the shaft. The improvement obviates the necessity of throwing belts off the pulley in order to prevent the wear of machinery while the engine is in motion, also making it more safe for the operatives.

Figure 1 shows one mode of attaining the object. H represents the hanger; E the driving shaft; G is a driving pulley fast to the shaft, E; J J are a series of rollers or pulleys revolving upon their respective axes; K K are a series of bolts passing through the hanger, H. The bolts are made smaller and square or flat at the port passing through the hanger, H, thereby making a shoulder, which, together with a nut, L, on the end of the bolt secures it firmly to the hanger, H. The peripheries of the rollers or pulleys, J J, are adjusted to the periphery of the driving pulley, G. The length of the ark of the hanger, H, and the number of rollers or pulleys being governed by the bearings that a belt would have upon the driving pulley, G. Now by moving a belt from the driving pulley, G, to the rollers or pulleys, J J, a lathe or other machine attached to the pulley, G, is instantly detached, and has no connection with the moving machinery.

Figure 2 represents another mode. M R represents a hanger; P is a loose pulley; O is a shaft; N is a driving pulley fast to the shaft, O. The hanger, M R, is constructed so as to let the shaft, O, pass through the part, R, without being connected, while at the same time the part, R, forms an axis or journal for the loose pulley to revolve upon. S is a collar put upon the journal, R, to keep the loose pulley, P, to its place. Now by moving a belt from the driving pulley, N, to the loose pulley, P, a lathe or other machine attached to the driving pulley, N, is instantly detached, and has no connection with the moving machinery.

The loose pulley, P, may be thrown in motion by means of friction at the peripheries of the driving pulleys, N, and loose pulley, P, and a lever to throw them together when passing the belt from one to the other, may be given to the loose pulley, P, by any known method.

Then again a hanger bearing a driving shaft may be constructed with an axis independent of the shaft for a loose pulley.

The claim is for a "loose or suspension pulley or pulleys and hanger having an axis whereby a loose pulley may revolve independent of the shaft.

More information may be obtained by letter addressed to E. W. Shippen & W. Campbell, West Philadelphia, Pa.

Lubricator of Machinery.

Self-acting greasers have now become a necessity, hence a number of improvements on such apparatus have recently been secured by patents. Among the number was one granted to John Sutton, of this city, on the 16th ult., which deserves honorable mention. The improvements in his lubricator for machinery embrace two parts; one consists in the arrangement of the cylinder and piston, which is employed to inject the oil or grease into that part of the engine requiring oil, the piston being placed within the grease cup, thereby rendering the apparatus more simple and compact, than others acting on a similar principle. The other part of the improvements consists in a certain arrangement of valves, whereby the feeder is charged with oil, and discharged into the engine, by simply moving the piston once back and forth.

New Seeding Machine.

The machine of Job Brown, of Lawn Ridge, Ill., whose claims are published in this week's list of patents, is for sowing seed broadcast, and not in drills. A series of oblique cups are placed upon a rotating cylinder underneath the hopper, in combination with distributing plates which convey the seed from the hopper in such a manner that it is sprinkled (sown broadcast) with perfect regularity and evenness over the whole ground traversed by the machine. It requires considerable practice, a nicely ballanced hand, and a good eye to sow broadcast so as to distribute the seed evenly, in the common way; this machine makes this business mechanical, and easily performed by a boy.

Burglar Alarm.

The Philadelphia *Ledger* speaks highly of the burglar alarm of D. Wells, which has been put in operation in that city in the house of Mr. Paul, Fifth street.

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Scientific American.

NEW YORK, FRBRUARY 10, 1855.

American Commissioner at the World's Fair.

It is well known that Edward Riddle, of Boston, was appointed U. S. Commissioner at the World's Fair in London, in 1851, without the least public qualification to recommend him for that position. He was not known as an inventor, manufacturer, or artist. He was undistinguished for engineering or mechanical capacity, and as for any sympathy with American Exhibitors at the World's Fair, he was never charged with the possession of such a noble feeling. Our government provided a frigate to carry exhibitors' articles to England, but so defective were the arrangements, and so deficient was the Commissioner in means to do anything for the honor of his country, that but for George Peabody, the American banker in London, who advanced ten thousand dollars for decorations and incidental expences in fitting up the American department, the whole affair, so far as the Commission was concerned, would have fallen—disgracefully fallen—through. It is well known that American exhibitors paid pretty well for the whistle in London, but we have never heard it asserted that Mr. Riddle was a loser by the taxes levied by him upon his countrymen.

A meeting was held in this city on the 11th of April, 1853, by the American Exhibitors at the London World's Fair, at which they expressed their opinions very freely respecting the modest demands of Commissioner Riddle upon them. Mr. Bell, of West Farms, near this city, stated that he was an exhibitor in London, had sent his articles by a private vessel, paid all expenses himself, and was awarded a medal, which was given to the Commissioner for delivery, but was refused by his secretary until he—Mr. Bell—paid £2 2s. ($10 12cts.) Mr. Roy, of West Troy, N. Y., stated that he had sent four plaid long shawls to the Exhibition, worth $24 15 cts. each, that Mr. Riddle sold two of them for $5 6cts. each, that one had been stolen, and that a lady to whom he sent an order to draw the other was refused it. Numerous other cases of a like character were related at that meeting, and it was unanimously admitted, that the seven hundred American exhibitors at the World's Fair, paid several thousands dollars for overcharges. Those whom our government sent to England to watch over their interests, were the very persons who, above all others, seemed to watch for an opportunity to make all out of them which they honestly could, in a pecuniary sense. We never conversed with an exhibitor on the subject who did not seem to be possessed with the feeling that the Commissioner—Mr. Riddle—instead of losing anything, was, on the contrary, a great gainer, yet we now find him applying to Congress, for remuneration for his services at the World's Fair in London. This evinces that he has either suffered from the position he occupied, or that he is ungrateful for the positive and incidental advantages which accrued to him from it.

On the 1st of this month, Senator Stuart presented Mr. E. Riddle's memorial asking for remuneration, and his petition was referred to the Committee on Finance. We respectfully suggest to that Committee the examination of competent witnesses, before they make their report on the matter. They will find the names and residences of quite a number of them on page 254, Vol. 8, Sci. Am. We have not the least doubt but a universal burst of indignation would be manifested by all these exhibitors, if a single cent were paid to Mr. Riddle without a full examination into the case, and a full investigation cannot be had unless exhibitors are called upon to give their testimony. As servants of the public, and as advocates of American industry everywhere, we call upon the Finance Committee of the U. S. Senate, to whom Mr. Riddle's petition has been referred, to give this subject a full investigation, and report on the same at an early date. This is a question which interests a great number of our citizens, and an opportunity is now presented to the Committee to unveil important facts that have been hid from the public for four years, although many efforts have been made to reach them. Such an investigation, carried out fully, will be an act of justice to all. If Mr. Riddle is innocent of the charges which have been made against him, and if he has suffered pecuniarily by his services in London, then he has been a much abused man, and a full investigation, for his sake, is demanded. If he has done what exhibitors have charged him with, at the meeting referred to, justice also demands that his conduct should be held up in an official and national light, as a warning to all unfaithful stewards in the Republic.

Muntz Metal Sheathing and Bolts—Caution to Shipbuilders.

In the last number of the London *Artisan* there is a letter from R. Armstrong, on Muntz patent metal, as an article of ship sheathing and bolting—a subject of the deepest importance to shipbuilders and underwriters. He asserts there should be an immediate investigation to see if mixed metals, such as Muntz metal, when used for the bolting and sheathing of vessels exposed to the action of sea water, retains its tenacity and ductility. He says, "in every case in my experience where it has been necessary to have bolts removed, I have found them broken asunder, or so brittle that the slightest force was sufficient to break them. From the appearance of the metal its nature seemed to be quite changed, having more the appearance of brown earthenware than brass. The same metal when used as sheathing becomes so brittle in a few years that it may be crushed in the palm of the hand. If such is the case with the sheathing the same agency may be supposed to be at work with the bolts when exposed to the action of sea water. The most prominent parts of a vessel, such as the stem, keel, and stern post, are bolted wholly with this metal. Vessels must be brought into great peril when fastened with bolts of such a treacherous material. I have no doubt that many of the ships that are never heard of are lost in consequence of the bolts having lost that tenacity and ductility so necessary to enable them to fulfill the purposes for which they are employed."

Mr. Armstrong thinks that an electrical action takes place when Muntz metal, which is composed of copper and zinc, is exposed to sea water, and that the operation is the same as in a galvanic battery. It is at least a most important question for practical chemists to investigate, and a most vital one to our ship owners. We believe that most all our ships are sheathed with this metal, and a great quantity of such bolts are used. As our mercantile navy is nearly the largest in the world, and is increasing with great rapidity, no time should be lost in investigating this question in all its bearings. If Muntz metal is merely cheaper in price than pure copper, it cannot be so economical and safe if it deteriorates in the manner described in the above extract. If Mr. Armstrong is correct, and he asserts positively he is, the sooner we go back to the use of pure copper for ship sheathing and bolts, so much the better as a matter of economy and safety for our ships.

Impure Coal.

A half-a-dollar, or even a dollar difference in the price of a tun of coal, is but a small amount, when quality is taken into consideration. Different qualities of coal come from the same mine, and neither the name nor price are evidence of its real value. We have known coals sold this season for seven dollars per tun that were really dearer than others—said to be from the same mine—which cost seven and a half dollars. Those who used and tested the two kinds informed us, and presented evidence of the truth of their assertions, that the kind which they bought at half a dollar less per tun, was about two dollars dearer than the other kind.

It is not an easy matter to decide upon the quality of coal from its appearance. It requires considerable experience to do this; hence it is easy to deceive those who buy. The coal which produces the least refuse (ashes) is the best. Some coals contain twice as much shale and incombustible matter as others. Great care should be exercised at the mines in selecting coal for the market. Coal has been very high in price this winter, and is very bad in quality; we never heard so many complaints before respecting bad coal. One evil is enough, but to combine two is far from flattering to our friends at the mines of Pennsylvania.

High Winds in New York.

We have paid close attention for a number of years to the periods of the day when high winds have prevailed in this city and Long Island, and we have been surprised at their occurring with almost undeviating regularity during night. Excepting sudden thunder gusts, gales of wind rise and continue during night, and die away with increasing daylight. Gales commence blowing generally from the south-east, then shift to the north-east, and expire in the north-west, with terrible dying throes. Sometimes, however, they commence in the north-east, and die out in the south-west. They all shift suddenly from point to point. We have often noticed that many moderate gales of wind take place between 9 and 12 P. M. We do not know why this should be so, we only know that such is the fact.

The Smithsonian Institute.

The Virginia *Sentinel*, speaking of the manner of carrying out the will of the founder of the above named Institution, takes the ground, that the method of *active operations* by scientific investigations, and by cheap publications of new discoveries for general distribution, is the only way of doing this. It says, "If a mammoth and indiscriminate library had been the agency to which Smithson looked to accomplish his purpose, he would have said so, because he could have said so in a word. Smithson was an ardent devotee of science and general knowledge, and pursued his researches with great zeal. He had a high reputation as a chemist, and as an illustration of his analytic skill, it is related of him that "on one occasion he caught a tear as it was trickling down the face of a lady, lost half, examined the remainder, and discovered in it several salts."

Railroad Explosive Signals.

The Railroad *Advocate* of the 27th ult. says, "We do not think under any circumstances that Mr. Wilkinson can be justly accused of having pirated any essential ideas of the Explosive Alarm Signals from the last volume of the Scientific American."

He never has been accused of *pirating* any essential ideas of Explosive Signals from our columns. If he obtained any such ideas from our columns when they were not the subject of a patent, they were free property to him and every other person. It always affords us pleasure when we hear of any suggestions made through our columns put into practice.

The *Advocate* further says, "previous to 1852, we had been accustomed to hear of detonating or fog signals, as being in general use in England." We never heard of their being in general use in England until now.

The Franklin Institute.

The annual election of officers for this old and respectable Institution, took place on the 25th ult., when John Cresson was elected President, and John Agnew and Matthew Baldwin Vice-Presidents. Saml. L. U. Merrick, the former President, was one of the founders of the Institution, and had been President since the decease of James Ronaldson, an honored name. He declined a re-election, because he considered that others were also entitled to share the honors of such an office. The officers who have been elected, are men of reputation as inventors and engineers.

Ocean Steamers.

Cornelius Vanderbilt, the great steamship proprietor, has published a letter stating his willingness to carry the semi-monthly mail to Liverpool and back for $15,000. He considers that the large sums now paid by the American and British governments for carrying the mail, blights individual enterprise, and defies individual competition.

Steam Engine without a Boiler.

By invitation of Mr. William O'Brien, on Friday last, in company with several others, we witnessed the operation of a "steam engine without a boiler," in the yard of a blacksmith's shop, in Twelfth street, below Locust. This engine is said to be of some five-horse power, is very simple in construction and mode of operation, and occupies but little room. The furnace is about the size of an ordinary cooking stove, and in the midst of the fire are two cast-iron steam generating cylinders, about five or six inches in diameter, lying horizontally and arranged longitudinally, and at the rear end turning up at an angle of ninety degrees into what may be termed the chimney, thence extending upwards to about the hight the flames are supposed to rise from the fire.—These cylinders, being entirely surrounded by and within the fire, are kept constantly red hot. Near the front end of these cylinders, from a water tank above, a given quantity of water is ejected into each alternately, by means of peculiarly contrived valves, worked by the engine. The water in certain definite quantities being thus thrown into the red hot cylinders, is instantly converted into its appropriate quantity and bulk of steam (or decomposed into its original gases,) at a high temperature, and is simultaneously therewith worked off through the upright part or end of the cylinders in the chimney, to which the two working cylinders of the engine, which are of smaller size, and situated in the rear, are connected. What is here stated, with the piston, connecting rods, cranks and shafts, comprise the entire apparatus. Owing to its simplicity of construction and operation, the little room it occupies, the small amount of metal used, it must be much less expensive in first cost than the ordinary steam engine with its cumbrous water boilers, &c.—[Phila. Ledger, Jan. 20.

[The above plan for generating steam is neither new nor scientific, and the *Ledger*, in a sentence which we have not quoted, does not seem to have much confidence in its practicability. The red hot cylinders cannot convert water into steam as rapidly as a common steam boiler. When water is placed upon a red hot plate of metal, it at once assumes the spheroidal form, and repels the action of heat, and is converted into steam but very slowly. Red hot cylinders are weak, and cannot stand any amount of steam pressure. Red hot iron decomposes water, by absorbing the oxygen and setting the hydrogen free, therefore a red hot iron boiler will soon be destroyed. It is similar in character to Dr. Aban's steam apparatus. The boiler of Theodore Paul, patented in England in 1824, was composed of a coil of pipe, in the center of which was the fire, and is thus described on page 369 of Hebert's History of the Steam Engine, "when the fuel is ignited and the pipes are heated to redness, the water is injected by a force pump in such small portions as to cause it to be immediately converted into steam." The same principle of generating steam is embraced in McCurdy's boiler, illustrated on page 192, Vol. 7, Scientific American, in a series of articles on steam boilers.

Means of Saving Life in Shipwreck.

It seems to us that our government is getting worse and worse with respect to providing sufficient means for saving life in cases of shipwreck. Thus on the night of the 28th ult., the brig Argyle went ashore on Squam Beach, and the crew, eleven in number, took to the rigging. There they clung, with the sea breaking over them all night, and part of next day, while quite a number of persons stood on shore looking on, unable to render any assistance for the want of proper means to do so. At last the rigging gave way, and ten of the unfortunate crew were drowned before the eyes of the on-lookers, while only one was saved—he being washed ashore by the billows. Is not this disgraceful? What is the use of your Francis' surf-boots and life-boats if not fit to be applied when required in such cases.

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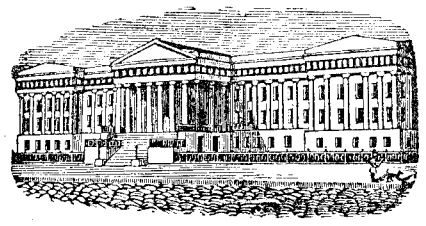

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from he United States Patent Office.

FOR THE WEEK ENDING JANUARY 30, 1855.

IMPLEMENT FOR BORING WELLS—I. J. W. Adams, of Sharptown, Md.: I do not claim the hollow auger, G, for that has been previously used.

But I claim the employment or use of the spring, g, attached to the handle, f, of the swinging or suspended auger, G, arranged substantially as shown, viz., with a knob or projection, h, on its outer surface, which knob or projection catches into a cavity in the under surface of the bail, F, for the purpose of holding the auger in its proper position while being operated.

[A notice of this invention may be found on another page.]

CLARIFYING GLUE—William Adamson, of Philadelphia, Pa.: I claim the employment of the material specified, for the purpose of clarifying glue, gelatin, size, &c.

HOT AIR FURNACES—A. H. Bartlett, of King's Bridge, N. Y.: I do not claim, of itself, in a hot air furnace, preventing the admixture of deleterious gases, generated on hot metallic surfaces, with the warmed fresh air, by means of jacketed air spaces interposed between the surfaces exposed to the action of the fire and the air to be heated; nor yet providing an escape pipe or passage to carry off the deleterious gases.

But I claim, first, in combination with the arrangement specified, of the serpentine fire and air flues, or courses, C and D, providing each horizontal flue with an escape casing or jacket connected by branch or otherwise (each horizontal casing) with a gas pipe or pipes uniting them with the chimney, as shown and described, whereby a sure and quick escape is established for the deleterious gases at each horizontal flue to travel where the fire and air are retarded in taking their upward course, and the air being heated, consequently more exposed to absorption of deleterions gas, and whereby the stratum of air being heated, and traveling in succession the several horizontal flues, D, is protected from admixture with it of the deleterious gas throughout its entire exposure to heat in the furnace, as described.

Second, I claim the arrangement of the fire flues, C, and air heating passages, D, specified, and traversing at right angles to each other when combined with division plates or their equivalents, so arranged that the one stratum or current of air to be heated passes upward throughout the several hot air passages or channels in a serpentine course, similar to but at right angles with the course given the flame simultaneously passing upwards in the fire flues, C, over, under, and between the hot air passages or flues, D, as shown and described.

[For a brief description of this useful improvement in furnaces, see No. 12 present Vol. SCI. AM.]

CAR VENTILATOR—B. T. Babbitt, of New York City: I claim the arrangement of a wind wheel, as described in connection with a wire gauze disk or screen revolving in a tank of water, the air passing through the said disk previous to entering the car, in the manner and for the purpose set forth.

SEED PLANTERS—John Blackwood, of Franklin Co., O.: I claim the additional hopper to catch the seed which falls off of the slide after it passes the brush, substantially as described.

SEED PLANTERS—Job Brown, of Lawn Ridge, Ill.: I do not claim, separately, the distributing plates, I, for they have been previously used.

But I claim the combination of the cups, F, placed obliquely on a rotating cylinder, in combination with the distributing plates, I, the above parts operating in the manner and for the purpose shown and described.

[See notice of this invention on another page.]

FOUNTAIN BRUSH—D. H. Chamberlain and John Hartshorn, of Boston, Mass.: We do not claim the combination of a fountain or reservoir with a brush or marking implement. Nor do we claim a tapering valve applied to a long rod and working in a socket or tapering hole made through the bottom of a fountain pen holder, the long rod extending through the fountain thereof. Nor do we claim a movable pin inserted in a conical tube extending into the body of a brush, and arranged at the lower end of a fountain tube or reservoir, such pin, in order to increase the flow of the marking fluid into the brush, being raised by pressing the brush downwards against an object.

What we claim is arranging or applying the brush, D, the valve, C, its rod, E, and the socket tube, B, together, as described, so that not only shall the brush be fixed directly to the valve and be movable backward and forward and around with and by it, but the socket be made to so encompass the valve and brush that the marking fluid may flow down around the external surface of the brush before penetrating into its interior, the same affording important advantages in cleansing the valve and maintaining the flow of marking liquid.

We do not claim the application of a piston to the reservoir, so that by the movement of such piston the reservoir may be filled with or emptied of marking fluid.

We claim so combining with the slide, E, and the fountain, A, a mouth tube, F, open at both ends, that such tube may not only serve to enable a person to supply the reservoir with paint or marking fluid, as described, but also to enable him to move longitudinally or rotate the rod, E, and its valve and brush.

And we claim the float, H, in combination with the opening at the inner end of the tube, F, and as arranged to move on the slide rod, E, and within the tube, A, and to operate therewith substantially in the manner and for the purposes as stated.

PLOWS—Alfred Doe, of Concord, N. H.: I claim, first, two separate furrow-boards arranged to vibrate perpendicularly, independent of the point and share, so as to turn alternately right and left furrows on level or inclined land, with equal facility; operating in combination with a swivel point and shares arranged to vibrate under the land side with the body or front portion of the furrow board, substantially as described.

Second, in combination with the swivel point shares, body and one of the furrow boards mentioned in the above claim, I claim a sub-furrow board arranged to vibrate perpendicularly, so constructed as to turn a subsoil furrow in one direction upon the top of the furrow just plowed in the opposite direction, thereby making it serve as a common plow, in one direction, and a subsoil in the other, substantially as described.

DIES FOR COP TUBE MACHINES—James Eaton, of Townsend Harbor, Mass.: I claim in machines for making cop-tubes, the method described of securing the step to the die for the purpose set forth.

DOUBLE-ACTING FORCE PUMP—George Fowler, of Northford, Conn.: I claim the combination of the solid piston with the cylinder and reservoir, when the piston is inserted from the lower end of the cylinder, and worked by a parallel side rod, or shaft outside of the cylinder, whether for single or double-acting pumps, so as to constitute it an efficient lifting pump, without suction valves, and the whole is constructed, combined, and arranged, substantially as set forth.

YOKE OF SHIRTS—Hezekiah Griswold, of Hartford, Ct.: I do not claim the insertion of gores upon the shoulders of shirts or other garments, that being old.

I claim, in shirts, the compound yoke, substantially as and for the purpose set forth.

CLOVER HULLERS—Johnathan Hibbs, of Tullytown, Pa.: I claim combining with the concave shell two flanges diverging from a central point, and so acting as to divide the chaff from the fresh fed straw during the time that the former is passing a second time round the cylinder, substantially as described.

PIANOFORTES—Alexander Hall, of Lloysville, O.: I claim sinking the middle octave bridge, a, below the level of the normal strings, so as to be clear of their vibrations, as set forth.

I claim, in combination with the depressed bridge, a, the perforations in the bridge, b, on the level with the top of bridge a for the purposes set forth.

I claim the extra hitch plate, c, in combination with the depressed bridge, a, and perforated bridge, b, as set forth.

I claim the adjustable bridge pin for the normal strings furnished with a screw and the notches and channels on its two sides, so that the normal strings can be regulated in their relative distances from the octave strings either vertically or latterally, as set forth.

I claim making the buff stop of two qualities of leather, a hard and a soft, for producing the harp effect, as set forth.

REIN STAFF SCREWS FOR SHIP CARPENTERS.—John Hobbs, of Hallowell, Me.: I claim the arrangement of the screw stems, C D, and E F, passing through the rein staff, A B, the sharp threaded screws. D and E, forced into the timber or side of the vessel by the lever, h, inserted in the aperture, k, and the nuts, g g, moved by the lever, i, to force the rein staff towards the vessel, together with the set down, L, on each screw, for the purpose of inserting wedges between it and the edge of the plank, to bring the plank into place for spiking on the side of the vessel.

CARRIAGE WHEELS—Washburn Race and Birdsill Holly, of Seneca Falls, N. Y.: We do not claim a hollow cast iron or metal hub.

But we claim the compressed tenon in combination with the annular cavity, in the manner and for the purpose set forth.

AUGERS—Russell Jennings, of Deep River, Conn.: I claim so constructing the cutting edges of a double twist auger bit, that the vertical scores shall follow the chisel, i. e., so that the cutting edges of scores and chisel shall never intersect the worm or helix of the shaft at the same point.

LOCKING SPINDLE DOOR LATCHES—W. H. McNamee, of Philadelphia, Pa.: I claim the guides, g, and the rim, f, of the escutcheon; the shelf, d, on the face plate, and the up right stem, inclosed with a spiral wire working through the shelf piece, d; the projecting arm, e, on the spindle and the forked bolt, D; the whole combined for the purpose of a latch and lock, as described.

MACHINE FOR FELTING HAT BODIES—S. S. Middlebrook, J. B. Blakslee & Chas. F. Blakslee, of Newtown, Conn.: I claim the employment or use of the two beds or plates, E J, corrugated on their inner surfaces, substantially as shown, the upper bed or plate, E, having an up-and-down, and also a lateral vibratory movement, given it by the cams, C, or their equivalents, and the lower bed, J, being elastic or yielding for the purpose of subjecting hat bodies to a rolling motion under requisite pressure, and thereby thoroughly felting the same, as described.

SEWING MACHINES—John B. Nichols, of Lynn, Mass.: I claim the combination of a binding guide with a sewing machine, meaning to claim the combination of mechanism, whereby the operations of directing or applying the binding to the edge of any material and sewing it thereon, are conducted by an automatic process.

FRAME OF GRASS HARVESTERS—Aaron Palmer, of Brockport, N. Y.: I claim connecting the wheel, A, the cutter beam, B, and the tongue, C, to the frame, D, in the manner described, by which the frame operates as a lever, of which the axle of the wheel, A, is the fulcrum, and by which means the cutter beam rises and falls independent of the wheel, thereby adapting itself to undulating surfaces; and by which means the draught of the team holds the cutter beam snug to the ground, thereby causing the machine to cut close and smooth.

LANTERN FRAMES—E. F. Parker, of Proctorsville, Vt.: I claim passing the guard wires of lantern frames through suitable holes in the corners or uprights, by which means soldering at such points may be dispensed with, as described.

CABLE STOPPERS—Jesse Reed, of Marshfield, Mass.: I do not claim stopping the motion of a chain cable by subjecting it to pressure between two plane surfaces.

But I claim the described arrangement of the lever, H, the crank, G, and the upper jaw, D, whereby the latter is allowed to accommodate itself to the varying size of the links, and the operation of stopping the chain is assisted by the friction of the chain itself upon the upper jaw.

FORCE PUMP—Henry Rogers, of Ferrisburgh, Vt.: I claim the combination of the suspended valve bucket with the stationary hollow plunger, or of the suspended hollow plunger with the stationary valve bucket, when so constructed, arranged, and operated as to serve automatically to clear the delivery pipe of water, as and for the purposes set forth.

HARVESTER CUTTERS—David Russell, of Drewersburgh, Ind.: I claim the combination of cutters with an endless chain or chains operating as described and for the purposes set forth.

PORTABLE FIRE ARMS—A. O. H. P. Sehorn, of Murfreesboro', Tenn.: I claim the combination of the box, springs, S and S', coiled spring, l, hammer, n, and casing, p, constructed, arranged, and operating as set forth, when used in connection with an external case, C H, for the purposes specified.

WORKING FRANKLINITE ORE—Thadeus Selleck, of Greenwich, Conn.: I claim the process of reducing Franklinite ore to obtain iron and the white oxyd of zinc therefrom, by working it under a lighter head, in a vertical walled low cupola furnace, substantially as described.

CARRIAGE WHEELS—Jno. Skelley, of Brooklyn, N. Y.: I claim constructing the wheel as shown and described, viz., having a concentric ring or band, D, constructed of wood, as shown, and secured by metallic bands, E E, on its sides, said ring or band being at any proper point between the hub, A, and rim, B, of the wheel, and having the half spokes, F, secured between the rim and ring or band, the whole spokes passing through said ring or band, for the purpose as shown and described.

STRAW CUTTERS—G. L. Squier, of Chicopee, Mass.: I do not claim, separately, the circular cutters or knives, for they have been used for analogous purposes.

But I claim the combination of the circular cutters or knives, b b', and finger plates, E, with the fingers, d, attached to them, when said cutters and finger plates are secured the proper distance from each other on their shafts, B B', by means of the rods, D D', and nuts, c c', as shown and described.

[A notice of this machine may be found on another page.]

CULTIVATOR TEETH—Joseph Stockdale, of Ypsilanti, Mich. I claim the reversible cast iron plate, marked fig. 3, with the groove on the under side, marked letter K, round cast-iron stay pin on the upper side, G, and also the application of the top of the cultivator tooth in the groove aforesaid, and also the application of the wrought-iron bolt or shank, passing through the said plate, as described.

FURNACES FOR ZINC WHITE—J. G. Trotter, of Newark, N. J.: I claim the manufacture of white oxyd of zinc, whether from native ores or metals, the use of the atmospheric air supply pipe, L, flues, M M, heating chambers, H H and J, and series of aperture, h h, in the sides thereof, or substantially like parts, for the purpose of conveying into the oven, a great number of infinitely small jets or blasts of heated atmospheric air (independent of the blast of atmospheric air supplied through the ash pit of the furnace to support combustion,) for the purpose of more thoroughly consuming the gases from the ore and carbon.

MAKING INDIA RUBBER CLOTH—H. G. Tyer and John Helm, of New Brunswick, N. J.: We claim the process described of making elastic fabrics without a previous preparation of threads, strips, or sheets, or the coating of the cloth by cement.

CYLINDRICAL BOXES—Elisha Waters, of Troy, N. Y.: I do not claim in general the combination of wood and paper in the manufacture of all descriptions of boxes.

But I claim, in the manufacture of cylindrical boxes, making the sides of said boxes of paper tubes, and the ends of wooden disks, substantially as and for the purpose set forth and described, whereby I am enabled to produce at once a better and a cheaper box, by making each part from the most suitable material and in the cheapest manner.

WAXING THREAD IN SEWING MACHINES—Salem Wilder, of Lynn, Mass.: I claim so applying the wax holder to the frame or arm of the machine, and between the needle and the eye of the needle carrier that the vertical movements of the carrier shall cause the thread to be moved or drawn up and down through the wax holder and its elastic bottom, whereby the saturating of the thread becomes improved, as specified.

I also claim the combination of an elastic bottom or partition and its compresser with the wax holder, the same being to regulate the application of the wax to the thread and to prevent its escape from the wax holder, essentially as described.

SAWING MACHINES—Pinney Youngs, of Milwaukie, Wis.: I claim, first, the employment or use of two pairs of guides, e e, secured to the ends of levers, D D, and arranged as shown, or in an equivalent way, so that said levers will be operated by the movement of the carriage, and each pair of guides brought alternately in contact with the saw near its cutting edge, the levers, D D, being operated simultaneously with the reversing movement of the carriage, for the purpose of allowing the saw to be properly guided or stayed while cutting in either direction, as set forth.

Second, I claim the combination of the toothed wheels, A' A', arms or levers, l' l', q' q'; and pawls, w' w', attached to plates, t' t', the arms, q', plates, t', and pawls, w', forming a clutch, and so arranged as to operate the wheels, A', and rotate the screw shafts, z, as shown and described, for the purpose of properly setting the log or timber to the saw; the movement of the wheels, A', being regulated by adjusting the pins, n', on the segments, o', or in an equivalent way, so as to give the required set to the log or timber.

[A description of this machine was published in No. 4, present Vol. SCI. AM.]

SPURS—J. S. Ewbank, (assignor to Wm. Everdell, Jr.,) of New York City: I claim the construction of a spur having a divided hinge branch, a a, for embracing the heel of the boot or shoe.

Also, I claim the mode of sustaining the divided branches, a a, by means of the shoulder screw nut, either as constructed by having said nut, E, with its bearing outside of the hinge of the jaws, or as sustained by means of the cone, F, substantially as described.

DELIVERING APPARATUS OF GRAIN HARVESTERS—E. A. Morrison, of Laurenceville, Va. (assignor to himself and R. J. Morrison, of Richmond, Va.): I am fully aware, that an endless belt with rakes thereon for conveying the cut grain from the platform, and hinged doors, controlled by weight or spring, have both been used on reaping machines, for gathering and delivering the cut grain in bundles; these I do not claim.

But I claim, in combination with an endless conveying belt with rakes thereon, and the weighted or spring door, the inclined flange on said door, under which the grain is carried and compressed, until the rake teeth come against said flange, when the door is forced upward on its hinges, and the cut grain delivered in compact bundles, as set forth.

WINDOW WASHER—G. A. Meacham, of New York City: I claim the arrangement of a sponge or brush at the end of a hollow handle or tube, connected by a hose or pipe to a body of water higher than the object to be washed, so that the water flows through the said sponge or brush at the very time it is rubbed or scrubbed against the window.

[An engraving of this invention will appear in next week's SCI. AM.]

RE-ISSUES.

PLOWS—C. R. Brinckerhoff, of Batavia, N. Y. Patented originally Oct. 11, 1853: I claim, first, combining with the plow beam and the plow and the forward end of the clevis, by means of a single shaft, two wheels, one on each side of the beam, and of different diameters, the one resting in the furrow and the other on the land, for the purposes set forth.

Second, I also claim making the tread of the furrow wheel narrow for the purposes described.

Third, I also claim making the furrow wheel beveling outward on the side which presses against the land, as above described, and for the purposes set forth.

Fourth, I also claim making the small wheel adjustable with reference to the shaft or axle, and the large wheel, as described.

I also claim the adjustable hangers, in combination with the plow beam and axle, for the combined purpose of bracing the axle, and rendering the wheel simultaneously adjustable with reference to the beam, without disturbing their adjustment relatively to each other, as described.

FASTENING LANTERNS—Chas. Monnin & Wm. M. Boath, of Buffalo, N. Y. Patented originally Aug. 1, 1854: We claim attaching the lamp to the lantern by means of the combination of the catches, e, with the flanges, a and f, and the ring to which the catches are hinged, or its equivalent; the purpose and object of the ring being to give the hinged ends of the catches a motion concentric or parallel, or nearly so, to the side of the lantern or the flange through which the catches pass.

Patent Case.

At the General Term of the Superior Court held in this city, a very important and interesting case of appeal relating to inventions was decided on the 27th ult. The parties were Sherwood and others, against Pierce and others, who had sued previously to compel the performance of an agreement to purchase of plaintiff and D. Fitzgerald, the improvement of the latter on iron safes, and pay them for the first two years ten per cent. on the sales, and after that twelve per cent. After using the invention for two years, the parties said it was not new, but a patent had been obtained, and the refusal to pay was still maintained. The question of fraud on the part of the plaintiffs had been laid before the jury on the trial at common law, who found there was no fraud as charged by the Judge, and the plaintiffs were entitled to the ten per cent. on the manufacture of the safes for two years. The Superior Court affirmed the judgment, the appeal being on the charge of the Judge.

Evaporating Cane Juice.

MESSRS. EDITORS—From the description of Wethered's stame and steam apparatus, on page 45, this volume, SCIENTIFIC AMERICAN, I am led to believe that if any benefit can be obtained from its use, there is a wide field for its application in Louisiana, for evaporating cane juice in sugar houses. On this plantation during the season of sugar making, we evaporate about 30,000 gallons of water from the cane juice daily, and there are several other plantations where the same amount of work is done. In 1847 Isaac P. Morris & Co., iron founders, Philadelphia, constructed for a planter in this State an apparatus for heating steam by passing it through a cast-iron pipe under the boilers before it was taken to the evaporators, but I do not know what was the result of the experiment. Of course it is only by fair practical experiment, continued, say for one season, that the merits or demerits of Wethered's plan can be settled. I desire to call attention to this, simply from a desire to see every useful improvement relating to that branch of business in which I am interested, introduced for the benefit of all concerned.

* *

Plantation near Thebodaux, La., Jan. 1855.

(For the Scientific American.)

Remarks on Lateral Motion of the Earth.

Mr. H. Pollard, in No. 18, supposes that the direction of the earth's axis is changing, and regards this change as the cause of "the emergence of the new land, and the submergence of the old." That the greater part of the present dry land was once the bottom of the ocean, is undoubtedly true, but it is just as true that the cause of this emergence and submergence is not the lateral motion of the earth. The direction of the earth's axis does not change, this is an established fact, proved above the possibility of a doubt by all astronomical observations, in all times and all countries.

One of Mr. P's. reasons for believing in a lateral motion of the earth, is the well known fact that fossil remains of plants and animals which grow only in tropical and temperate climates, are found near the Arctic regions, indicating a great change of climate. This latter change is, at the present day, generally attributed to the internal heat of the earth itself, the surface of the earth having then not yet cooled down to the present temperature. Mr. H. P. says, the lines of the public surveys, no doubt run on the true or astronomical meridian, vary from the magnetic meridian one degree east for about every twenty years since the surveys were made, and he therefore comes to the most singular conclusion, that the axis of the earth is moving east. If you go aboard a steamer in Liverpool, and find yourself after about twelve days in New York, the conclusion is, New York has moved east towards you, yourself having been stationary. The astronomical meridian never changes, the variations of the magnetic meridian are different at different times, they were for Paris as follows:

1580.	11°	30′	East.	1814.	22°	34′	West.
1618.	8		"	1816.	22	25	"
1663.	0		"	1825.	22	22	"
1700.	8	10	West.	1828.	22	5	"
1780.	19	55	"	1832.	22	3	"
1805.	22	5	"	1835.	22	4	"

It may here be stated, that besides these, the secular variations, there are daily variations, which are for Paris as follows: during the night the needle is nearly stationary, at sunrise the needle commences moving west, till about 5 P. M., when the needle moves back east till 9, 10, or 11 P. M. These variations are greater in summer than in winter, from April to September 13 to 15 minutes, from October till March 5 to 6 minutes, on some days 25 minutes, on others only 5 to 6 minutes. South of the magnetic equator, these variations are in opposite directions, the north pole moves east from morning till 5 P. M.

A. Z.

Baltimore, Jan. 30th, 1855.

[Our mind never has been able to receive the internal heat theory of the earth, as affording an explanation of evidences which have been furnished in abundance, of the cold arctic regions being once the abode of elephants, and other animals now belonging to the tropical regions. It has always appeared to us to be irrational; probably the cause will yet be discovered.

Life Boat Ships.

MESSRS. EDITORS—With reference to an article in the SCIENTIFIC AMERICAN two weeks ago, upon the "Safety of Ships," allow me to correct your rendering of my suggestions for the same, on page 131. It will there be seen that I proposed the adoption of one longitudinal keelson of plate iron, and two transverse bulkheads only of the same. These are all the partitions necessary to divide the hold into six compartments.

Since writing to you first upon this subject, I find that the mover of this improvement for constructing life boat Steamers—Mr. Griffiths—advocates its immediate adoption, in his *Nautical Magazine*. I am glad to find you, as well as our highest naval authorities, so well agreed upon the importance of embodying this principle in any new legislation by Congress upon this subject.

PRACTICAL OBSERVER.

East Broadway, Jan. 28, 1855.

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TO CORRESPONDENTS.

R. J. S., Jr., of N. C.—Your plan of capturing Sebastopol, by discharging bomb shells filled with camphene upon the doomed city, may be very good. And it may be, as you eloquently remark, that "The proud castles of Inkermann, which the Russian Autocrat has boasted was impregnable, could be taken in one day." Perhaps also, as you further state, "the proudest navy that ever spread its canvas pinions to the joyous breeze, whose sturdy sides bristled with threatening cannon, would melt at the magic touch of this wondrous agent like the unreal fancies of a sleeping brainat the waking moment of a mighty wind!" We are pleased to know that in your mind there is "no shadow of a doubt" as to the success of this invention. We would suggest that you communicate with H. B. M. Queen Victoria, and H. I. M. Napoleon III., of France, so that the present European war may at once be brought to a termination. Patents for such gigantic inventions are unnecessary. No government would hesitate to pay a suitable reward for the bare idea. We would further suggest that instead of only firing bombs filled with camphene, you make an improvement in the shape of a machine for spouting the camphene in a continuous stream upon the town. If a lighted candle were held near the nozzle, the camphene would ignite as it issued, and thus a steady volume of liquid fire might be poured in upon the town, which would insure its instant destruction without the firing of a gun. If the besieged city were difficult of near approach, a hose pipe might be quietly laid, under cover of the night, up to the very walls, and a murderous deluge be suddenly commenced. This apparatus could also be used on shipboard. A method of capturing whales, substantially the same as yours, has long been in use; we do not sufficiently understand your plow improvement to judge of its patentability.

J. A. R., of Mass.—Your device for opening and closing window shutters does not present any novel feature that we can discover; we have seen the same thing in operation on window shutters in this city, and several applications have been made for patents for it within the past five years.

W. P. H., of Pa.—Your ideas in regard to ascending inclines on railroads, and turning curves, do not present anything new or patentable; we have long been familiar with the essential characteristics embraced in each, and we cannot advise you to waste your time upon them.

J. D., of Ohio—You will oblige us by distributing the extra SCIENTIFIC AMERICANS among those who would be likely to wish such a paper. The sketch of your alleged improvement in water engines presents novelty, and we should think a patent might be secured for it, but we cannot think it capable of operating as well as a water wheel under the same conditions, and as the apparatus is more expensive and more liable to derangement, we cannot advise you to do anything with it.

J. M. W., of Mich.—We shall need drawings if you want an opinion as to the patentability of your invention; a model would be still better. What advantages do you expect to realize?

N. B., of Me.—The principle involved in your stove is not new. The arrangement appears novel to us and could perhaps be patented.

J. S. E., of Md.—We have not the numbers you speak of. You have not given the depth of the ditches, how then can we tell the quantity of water; if you know the quantity of water that gathers in a given time, say 10 cubic feet in a minute, or whatever it may be, you can easily calculate the depth and width of the ditch, also the fall—the latter requires to be very small.

E. A. H., of Ill.—Yours expired with No. 15. The direction of A. O. Hill's paper has been changed; there was no direction sent with his subscription. Have you put the coking apparatus in practice? we do not see how it can coke the coal if the blast is driven through it, it will produce complete combustion.

W. S. M., of Ill.—Your harrow-teeth corn sheller is new so far, as we know, but we really do not see its advantages.

T. M. K. W., of ——.—If you had furnished us with your place of residence, we should have written in answer to your letter about the new material for making paper, of which you furnish a sample. There is no way by which you can protect yourself in the exclusive product of the article: like cotton, it is a natural plant, and all are free to cultivate it.

J. L., of Mass.—The lock which you describe for sliding doors appears to us to be new, and we think a patent may be obtained for it. You had better send us a model for examination.

H. C. L., of Ga.—Overman's Metallurgy, is the book you want.

E. L. P., of Mass.—You cannot be interrupted in the use of your machine, in view of the facts set forth, and we presume no attempt will be made.

J. D. M., of Ala.—The ideas you suggest in regard to vertical boilers cannot be considered as possessing any novel features. In Boone's boiler the same ideas are carried in to effect.

J. M., of N. J.—Send us a sketch of your churn.

H. F. O., of L. I.—We think you can procure "Borden's Meat Biscuit" of J. H. Brower & Co., 45 South st., N. Y.

S. W., of N. Y.—The camera-obscura is the best—the camera-lucida the cheapest; but there is a difference in the quality of instruments, just as much as in good and bad knives.

J. M. Jr., of Pa.—Use a very weak solution of glue, carefully put on, to cover your pencil drawings.

J. H. K., of Va.—Your plan of a blast for furnaces will work well enough, but a blower driven by the wheel, will do as well, and can be made and maintained at less expense.

J. S., of Ky.—Your book is much wanted; your questions you will find in another column. We have inquiries every week for a good work on millwrighting; there is not one in print.

G. P. E., of ——.—Yours has been received respecting raising water for cattle.

G. A. B., of Me.—Your plan of increasing the buoyancy of vessels is an old one; some vessels are built in that manner.

W. R., of Ky.—You must use lead and leather for the valve of the air gun. The surface of the lead must be scraped perfectly smooth.

N. P. L., of Canada West—We cannot tell you what is the best speed to drive your circular saw. You may drive it just as fast as you can if it is well hung. You need not be afraid.

E. R. R., & L. L., of Ill.—We have not answered you before, because the question, we thought, might easily be answered by asking yourselves, what is a wedge. Your rods certainly will not answer in the affirmative. If they are not levers what are they? As combined with the top lever they form a compound lever.

J. T., of Pa.—We discover nothing new or patentable in your power wagon.

S. F., of Me.—We have no statistics showing what the importation has amounted to from the countries you specify, for the years 52, 53, and 54.

H. F. B., of Ind.—Your letters patent, with ten dollars, came duly. Your engraving will appear in next week's paper.

J. P. N., of N. Y.—Making an eaves trough pipe small instead of large is not patentable.

X. C. S., of Vt.—You could not patent the application of a bow to a wood saw. It would not be considered the subject of a patent.

J. S., of Mich.—It takes about seven times the quantity of cold water to condense steam that you require for the boiler. You may save some of your steam by exhausting it in the cistern. If this does not answer your purpose, we do not advise you to try the condensing by a long pipe.

E. Z. F., of La.—You must try and establish your priority of invention as soon as possible, or your witnesses may soon be beyond your reach; it will then become public property, at present you could not use it with safety.

A. S., of Phila.—We have tried to get you a receipt for securing india rubber soles on leather shoes; we have been told that india rubber, cut in very small pieces, and some gutta percha, softened with warm turpentine, will, if laid upon the shoe, then heated with a hot iron, and the sole put on and pressed down, stick first rate.

S. D. C., of Wis.—Do you claim the plates secured to the wire, if so, we do not see how a patent can be obtained, the same principle is employed on all the telegraph lines.

A. W., of Ct.—When we replied to your inquiry in regard to alarm locks, there was evidently a mistake. We should have stated that an alarm lock (not clock) is an old device, several modifications having been made in locks of this character. The application of an alarm to a lock could not now be patented.

J. T., of Md.—Worm gearing for moving the carriage of a saw mill could not be patented. It has been used for analagous purposes.

W. C., of Mass.—We have some petitions in our possession against the renewal of the Woodworth Patent, which we shall be very glad to furnish to those who may desire them. As we have but few, it is to be hoped that they will be faithfully used by those who call for them.

B. F. & Son, of N. C.—Our edition of the patent laws is entirely run through, and we are awaiting for some movement of Congress towards an amendment at this Session. Whenever we get another edition ready you shall receive a copy.

T. G., of Ala.—W. M. Raymond & Co., 536 Broadway, this city, are the only agents we know of for the sale of Fisk's Metallic Coffins, in this City.

M. K. C., of Tenn.—Steam does not wind up when it exhausts, as you state; it rolls over and spreads out.

C. C., of New York—You must use acid diluted with water for etching, and wash off a number of times. The final washing must be given with warm water.

J. T. W., of Ga.—If you could purify the water for your boiler before it is used, you would find it the best plan. We have no suggestion to make at present. You will find it a matter of safety to use a lightning rod, even though your house is surrounded with trees.

J. H., of D. C.—We have not received the report mentioned in your letter. We arrived at the opinion you were in the right a long time ago. Ethnology is a useful science; we have never questioned that. The chemical tracts prepared for the Institute were very good, but might have been better; this we judge from the means we have of obtaining such information.

A. B. H., of Md.—We advise you to get a good steam engine, and not use your wheel any longer, as your supply of water is precarious.

R. G., of D. C.—The hot air engine is defunct for a certainty. We do not wish to kick at a dead lion. We have had enough of the subject to last us for a considerable time.

W. N. M., of Mass.—It will require many years of hard study for you to become acquainted with any single branch of practical chemistry.

T. W., of Texas—Your method of extinguishing fires is neither new nor patentable.

F. F., of N. Y.—If we saw the model of your liquid manure wagon, we could speak more intelligently on the subject; from your sketch it appears to be good.

S. M. B., of Mass.—Yours will appear next week.

R. W., of Ind.—A cubic foot of water weighs sixty-two and a half pounds.

J. M. T., of Tenn.—Your invention appears to be a good one, and you should take measures as soon as possible to secure it by patent.

W. W., of N. Y.—Camphene will not explode in the liquid state.

Money received on account of Patent Office business for the week ending Saturday, Feb. 3:—

A. W., of O., $55; C. C., of Mich., $30; B. & C., of N. Y., $100; B. B. & Y., of N. Y., $30; E. F. B., of Ct., $30; J. H., of N. Y., $30; J. A., of N. Y., $55; C. C. R., of Pa., $10; T. J. K., of Pa., $25; B. & C., of Tex., $25; K. & F., of Mass., $30; D. S. H., of R. I., $30; A. B. C., of N. Y., $30; J. U. W., of N. Y., $150; J. B. T., of N. Y., $30; M. S. K., of Pa., $10; L. C. S., of Ct., $30; A. L., of Pa., $55; J. A., of N. Y., $30; E. W., of N. J., $25; H. & A., of N. Y., $30; W. M., of N. Y., $30; T. G., of R. I., $30; G. L., of N. Y., $55; T. O. M., of N. Y., $30; J. Mc N., of N. Y., $25; A. D. R., of N. Y., $245; R. J. M., of N. Y.; $30; E. B., of O., $55; H. L., of N. Y., $60; E. A. J., of N. Y., $30; C. W. F., of Mass., $65; S. H., of N. Y., $30; A. M., of N. Y., $25; J. M. B., of N. Y., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Feb. 3:—

W. L., of Md.; S. & W., of N. J.; I. W., of Wis.; I. R., of O.; A. W., of O.; B. & C., of Tex.; T. J. K., of Pa.; A. M., of N. Y.; C. W., of Tenn.; E. W., of N. J.; J. M. B., of N. Y.; C. M., of N. Y.

Important Items.

MODELS—We are receiving almost daily, models of inventions which have not the names of their inventors marked upon them. This usually prevents us from taking any notice of them whatever. We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and sometimes prevent the model from being mislaid.

BACK NUMBERS AND VOLUMES—We have the following numbers and volumes of the SCIENTIFIC AMERICAN, which we can supply at the annexed prices:—Of Volume 5, forty numbers; price in sheets, $1; bound, $1,75. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Volume 7, all; price in sheets, $2; bound, $2,75. Of Volume 8, none complete, but about 30 numbers in sheets, which will be sold at 50 cents per set. Of Volume 9, complete in sheets, $2; bound, $2,75.

☞ We are able to furnish all the back numbers of the present volume of the SCIENTIFIC AMERICAN, and to new subscribers we shall continue to send the back numbers as long as we have them, so as to render their volumes complete.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

RECEIPTS—When money is paid at the office for subscriptions a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgement of the receipt of their funds.

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American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—MESSRS. M UNN & CO., Publishers and Proprietors of the SCIENTIFIC AMERICAN, continue to prepare specifications and drawings, and attend to procuring patents for new inventions in the United States, Great Britain, France, Belgium, Holland, Austria, Spain, etc., etc. We have constantly employed under our personal supervision a competent board of Scientific Examiners, which enables us to despatch with great facility a very large amount of business. Inventors are reminded that all matter intrusted to our care are strictly confidential, and hence it is unnecessary for them to incur the expense of attending in person. They should first send us a sketch and description of the invention, and we will carefully examine it, state our opinion, and the expense of making an application, if deemed new and worthy of it. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps toward making an application.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

It is very important that trustworthy and competent agents should be employed in securing patents, as great care is necessary in the preparation of the papers, as well as integrity in taking proper care of the case until the inventor is duly invested with his legal rights. Parties intrusting their business in our hands can rely upon prompt and faithful attention. Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that the largest proportion of patents applied for in the U. S., go through our agency.

The offices of Messrs. Munn & Co.'s American and Foreign Patent Agency are at 128 Fulton Street, New York; London, No. 32 Essex st., Strand; Paris, No. 29 Boulevard St. Martin: Brussels, No. 6 Rue D'Or.

TO ENGRAVERS AND CALICO PRINTERS—The subscriber would like to sell State, county, or individual rights for his patent self-acting punching apparatus for shading small pattern and plain figured. It can be attached to any old screw machine for a trifling expense, and is warranted to give satisfaction or no pay. Reference, Messrs. Abbot & Saunders, Crompton Print-works, Warrick, R. I., James Arthuren, foreman engraver. Faxendale's patent eccentric doctor motion also for sale. For further particulars address JAMES BAXENDALE, care B. Dean & Son, Providence, R. I. P. S. Wanted, an old second-hand screw engraving machine. 22 2*

PORTABLE STEAM SAW MILL ENGINES—Silver Medals awarded by the Franklin Institute and Pennsylvania State Agricultural Society in 1851, 1853, and 1854. A number of these engines are now at work driving portable up and down, and circular saw mills, also mills where the water power has failed. Circulars will be sent by addressing the inventor, A. L. ARCHAMBAULT, 15th and Hamilton sts., Philadelphia, Pa. N. B. Portable engines always on hand. 22 4*

ELECTRO MAGNETIC MACHINES—Telegraph Registers, Receiving Magnets and keys manufactured and for sale at No. 3½ South Seventh street, Philadelphia, by W. C. & J. NEFF. 22 7

UNITED STATES PATENT OFFICE,
Washington, Jan. 11, 1855.

ON THE PETITION of Loring Coes, of Worcester, Mass., praying for the extension of a patent granted to him on the 16th day of April, 1841, for an improvement in "screw wrenches," for seven years from the expiration of said patent, which takes place on the 16th day of April, 1855.

It is ordered that the said petition be heard at the Patent Office, on Monday, the 2nd of April next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 22nd of March; depositions and other papers relied on as testimony, must be in the office on or before the morning of that day, the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.: Evening Argus, Philadelphia, Pa.: Scientific American, New York, and Boston Post, Boston, Mass., once a week for three successive weeks previous to the 2nd day of April next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy, and send their bills to the Patent Office, with a paper containing this notice. 20 3

TEVIS & BARBAROUX, LOUISVILLE, KY.—Manufacturers of Steam Engines, Mill Machinery, superior Force and Lift Pumps, cast iron Screw Pipes for gas, steam, or water, largely used by railroads in supplying water stations, or suction pipes for pumps, etc., etc., being cheaper and better than copper or lead. Tobacco, Lard, Timber, and Mill Screws, always on hand. Cast iron Railings, Railroad and Car wheels, other castings for railroads, and general job work. 20 4*

ANGLO AMERICAN AGENCY—Office No. 20 Hatton Garden, London, for the introduction and sale by commission of American Manufactures, machinery, Inventions, and articles suitable for the European and British markets. Parties desirous of introducing their goods to the notice of the European public, will find this the most advantageous, direct, and economical method. All communications must be post-paid, addressed to No. 20 Hatton Garden, London. 21 4

NEW HAVEN MANUFACTURING COMPANY Machinists' Tools. 65 Iron planers of all sizes: 350 Engine and Hand Lathes, all sizes; 50 Upright and Horizontal Drills; 25 Bolt Cutters: 10 Gear Cutters; all kinds and sizes of Chucks, Slide Rests, Hand Drills, &c. These tools are of superior quality, and as they are built by the quantity, can be afforded and will be sold at low rates. For cuts giving full description and prices, address New Haven Manufacturing Co., New Haven, Conn. 21 tf

BOOTH'S PATENT GRAIN SEPAR TOR—Manufactured at Cuyahoga Falls, Ohio, warranted to be the best thing of the kind ever used for milling purposes, with horizontal and perpendicular blast, also improved shaking riddle of perporated copper, giving a smooth surface, cleans from 10 to 500 bushels per hour of wheat, corn and buckwheat. Sections where garlic, oats, smut balls, etc., are troublesome, it is indispensable to the manufacture of good flour. A more particular account will be given by addressing the manufacturer at Cuyahoga Falls, Ohio. J. L. BOOTH. 21 6*

A CLIPPER AMONG THE MONTHLIES—The Monthly Nautical Magazine, devoted exclusively to the Maritime interests of the United States, embracing ship-building, commerce, navigation, and marine engineering—will commence its second volume in April, 1855, enlarged to 96 pages. This work contains draughts of some of the finest vessels of the age, with other engravings, and is one of the most valuable publications in the country. Terms, single copies $5 per annum, or $2,50 per volume. Club Rates—Five copies for $20: twelve copies for $50. Sample copies sent when requested. Address GRIFFITHS & BATES, Editors and Proprietors, 79 John st., New York. 21 4

OUR CATALOGUE, of Optical, Mathematical, and Philosophical Instruments, in pamphlet form: a new edition, with numerous illustrations, is now in press and will be issued in a few weeks. This Catalogue is furnished on application, and sent by mail to all parts of the United States and the Canadas free of charge.
McALLISTER & BRO., Opticians,
(Established in 1796,) at their new store, 194 Chestnut street, Philadelphia. 21 3

A PROFITABLE INVESTMENT—Can be made by purchasing rights of my Patent Tenoning Machine, patented Aug. 29th, 1854, pronounced by good mechanics to be the best machine in use; is adapted to all kinds of work including double and cap tenons for car or other heavy work, will do the work of from three to eight ordinary machines, can be set in one minute for boring or squaring the ends of stuff for rights or machines. Address C. P. S. WARDWELL, Lake Village, N. H. 19 4*

MODELS FOR INVENTORS—CHARLES KIRCHOFF, Manufacturer of Models, Scientific, Philosophical and Artistic Instruments, Machines, &c., corner of West Broadway and Thomas street, New York. 19 4*

HUB MORTISING MACHINE—Price Reduced—We have finished a few of Roys and French's patent, undoubtedly the best machine for the purpose ever invented. We will take back the machine and refund the money, in all cases, if they fail to satisfy buyers. Wagon and carriage makers will do well to give them a trial. They will bore and mortise thirty to forty hubs a day, and answer also for other work.
20 4* TEVIS & BARBAROUX, Louisville, Ky.

TO LET, WELL LIGHTED ROOMS with Steam Power—at low rates, in the new buildings 7, 9, 11, and 13 Canal, corner of Elm: and 98, 100, and 102 Walker. Apply to M. J. GAUDU, Engineer, 102 Walker st. 20 4*

MACHINE GROUND CIRCULAR SAWS—(Patent applied for.) Mill men would do well to try these saws, are perfectly free from thin or thick places, can be used thinner and with less sett, and run faster than any other hitherto made. All diameters and thicknesses warranted perfectly true. HENSHAW & CLEMSON, 31 Exchange street, Boston. 19 8*

THE FRENCH EXHIBITION—Parties who have applied for space in the French Palace of Industry, and who do not intend to be present at the Exhibition, are recommended by the undersigned to arrange with Messrs. Gardissal & Co., No. 29 Boulevard St. Martin, Paris, who are prepared to put upon Exhibition, attend, and effect sales of articles intrusted to their care. It is a responsible concern. S. H. WALES, State Commissioner, Scientific American Office.

BUFFALO MACHINERY DEPOT—Terrace St. and 36 Lloyd st., Buffalo; J. W. HOOKER, Proprietor, H. C. Brown, Superintendant, offers for sale Machinists' tools of all kinds: Engine Lathes, Planers, Drills, Chucks, Boring Mills; also machinery of all kinds on hand or furnished to order. 7tf

STAVE AND BARREL MACHINERY—Hutchinson's Patent. This machinery which received the highest award at the Crystal Palace, is now in daily operation there. Staves, heading, &c., prepared by it are worth to the cooper 20 to 40 per cent. more than when finished in any other way. Special attention is invited to the improved Stave Jointer. Apply to C. B. HUTCHINSON & CO., Crystal Palace, or Auburn, N. Y. 13 tf

PATENT DRIERS—Zinc Driers, Graining Colors, Stove Polish, Gold Size, &c., &c., 114 John street, New York. QUARTERMAN & SON, Manufacturers. 1 6m

HARRISON'S GRAIN MILLS—Latest Patent.—$1000 reward offered by the patentee for their equal. A supply constantly on hand. Liberal Commissions paid to agents. For further information address New Haven Manufacturing Co., New Haven, Conn., or to S. C. HILLS, our agent, 12 Platt Street, New York. 13 tf

NORCROSS ROTARY PLANING MACHINE—The Supreme Court of the U.S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringemet of the Woodworth Patent.
Rights to use N. G. Norcrois's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
Office for sale of rights at 208 Broadway, New York; Boston, 27 State street, and Lowell, Mass. 16 6m*

CHEAP LIGHT—A. M. MACE, manufacturer of atmospheric or Benzole Gas Machines: size from 2 to 1000 lights. All orders promptly executed corner of Main street and Harrison avenue, Springfield, Mass. 15 3m*

MACHINIST'S TOOLS—SHRIVER & BROS., Cumberland, Md., (on B. and O. Railroad, midway between Baltimore and the Ohio River,) manufacturers of Lathes, Iron Planers, Drills and other machinists tools 50 6m*

STATIONARY STEAM ENGINES—The subscriber is now prepared to furnish, with or without pumps, boilers, &c., Horizontal Engines on iron bed frames, good strong, substantial, plain finished engines that will do good service, say from 4 horse, $215, to 30 horse, $1,037; they have Judson's patent valves, and will be warranted to work well. S. C. HILLS,
9 e3wtf 12 Platt st., New York.

WIRE ROPE OF IRON AND COPPER—For Mines, Inclined Planes, Hoisting and Steering purposes, Stays or Braces, &c., &c., much safer and far more durable than the best hemp or hyde ropes. Also for Sash Weights, Dumb Waiters, Lightning Conductors, &c. CHARLES W. COPELAND, No. 64 Broadway. 14 eowtf

A. B. ELY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill Irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
8 1y* LOGAN VAIL & CO., 9 Gold st., N. Y.

NORTHVILLE MACHINE WORKS—Manufactory of Machinists Tools, consisting of Engine Lathes, Power Planers, Hand Lathes, Engine Lathe for turning chair stuff, all of the most improved patterns and quality of workmanship. Worcester, Northville, Mass., Augus 1854. TAFT & GLEASON. 50 1y*

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Science and Art.

History of Reaping Machines.—No. 18.

On Jan. 15th, 1850, Homer Adkins, of Round Prairie, Ill., obtained a patent for a mode of giving motion to the cutter. For engraving of this machine see page 12, Vol. 5 SCIENTIFIC AMERICAN, and for claim see page 150 same volume, and for an extension of his plan of giving a reciprocating intermittent motion to the rake, to deposit the grain, after being cut, in regular bundles, see engravings on page 60, Vol. 6 SCIENTIFIC AMERICAN. On the same date of the above (15th of Jan.,) John E. Heath, of Warren, Ohio, obtained a patent for cleaning the teeth of the cutters from gum and dirt; the nature of the improvement consists in giving the cutters a larger vibration than ordinary, at suitable intervals, (see claim—same page as Adkins.) On July 20th, Hazard Knowles, of Washington, D. C., and H. C. Rivington, of Holmes, Ohio, obtained a patent embracing four claims, for rendering the cutters self-sharpening, for collecting and binding the grain in gavels after being cut, and for steering the machine. (See claims on page 342, Vol. 5, SCI. AM.) On the same date Jacob Pierson, of Wilmington, Del., obtained a petent for an arrangement of cutters bolted to an endless belt revolving in a vertical orbit on a guarded rail. (See claim same page as Knowles' and Rivington's.) On August 13th, John Hinton, of Pack's Ferry, Va., obtained a re-issue of his patent of May 22, 1849; (see claim, page 390, Vol. 5, SCI. AM.) On the 17th Sept., same year, Ebenezer Danford, of Geneva, Ill., obtained a patent for two sickles or cutters, moving in opposite directions—a shear cut; (see his claim on page 14, Vol. 6, SCI. AM.) In October following, Stephen Bowerman, of Detroit, Mich., obtained a patent for cutting corn stalks in the field by two rotating saw teeth wheels; on the same date J. J. Herndon, of Marlborough District, S. C., obtained a patent for a rice harvester; (see the claims of both patents on page 30, Vol. 6, SCI. AM.) On the 8th following, Geo. Hart, of Dillsborough, Ind., obtained a patent for a rotary cutter. On the same date, Edmund Quincey, of Lacon, Ill., obtained a patent for a rotary reaper also; (see the claims of both patents on page 38, Vol. 6, SCI. AM.) On the 15th of same month, Wm. Bailey Coates, of Big Lick, Va., obtained a patent for a hemp harvester, which embraces three claims; (see page 46, same Vol. SCI. AM., on which is also published the claims of Wm. Watson, of Chicago, Ill., for a corn harvester, which embraces the gathering, husking, and shelling at one operation). These comprise all the reaper patents granted in 1855.

Soap.

The word soap or sope, from the Greek *sapo*, first occurs in the books of Pliny and Galen, and is, according to Dr. Gregory, derived from the German work *sepe*. Pliny informs us that soap was first discovered by the Gauls, that it was composed of tallow and ashes, and that the German soap was reckoned the best. According to Sismondi' the French historian, a soap-maker was included in the retinue of Charlemagne.

At Pompeii (overwhelmed by an eruption of Vesuvius, A.D. 79,) a soap boiler's shop with soap in it, was discovered during some excavations made there not many years ago.

From these statements it is evident that the manufacture of soap is of a very ancient origin; indeed, Jeremiah figuratively mentions it—"For though thou wash thee with natron and take thee much sope, yet thine iniquity is marked before me." (Jer. ii. 22.)

The primary soaps are divided into hard and soft soaps; the hard soap contains soda as the base; those which are soft are prepared with potash. These are again divisible into varieties, according to the fatty matter employed in their manufacture, also aecording to the proportion of alkali. The most important of these to the perfumer is what is termed curd soap, as it forms the basis of all the highly scented soaps.

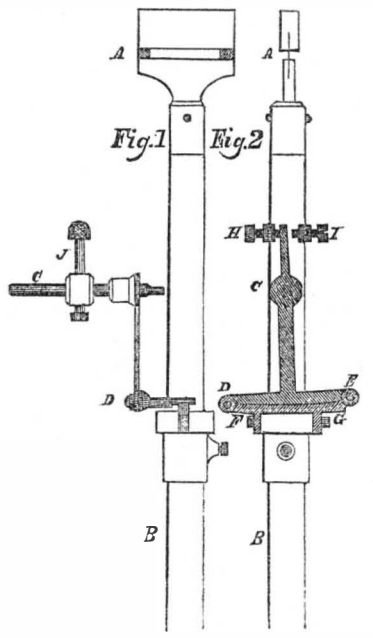
SEPTIMUS PIESSE.

(For the Scientific American.)

Brown's Pendulum Detachment.

The annexed figures represent a new pendulum detachment for church clocks, invented by J. R. Brown, of Providence, R. I.

Fig. 1 is a side, and figure 2 a front view of the upper part of a pendulum rod which is suspended by two springs at A. Similar letters refer to like parts.



C D E is the guide or crutch, shaped like an inverted T, and is placed back of the pendulum. It is fastened, as usual, to the palle, shaft, the center of which is at C. F and G are two pieces of steel, screwed one on each side of the pendulum parallel with the crutch and curved to correspond with a circle drawn from the point of suspension, A, as a center. At D and E, in the crutch, and perpendicular to it, are placed two square steel pins which embrace the arc, F G, in the same manner that the fork of the common guide takes hold of the pendulum. H and I are two screws attached to the frame of the clock, between which plays the piece, J, to serve as a guard to prevent the pallets from being thrown out of place.

OPERATION—In figure 2, the pendulum is supposed to have finished its vibration to the right and is now returned towards D.

The arc, F, first strikes the pin, D, which unlocks the pallets from the escape wheel, causing the pin, F, to press upon the end of the arc, G, thereby giving impulse to the pendulum. But owing to the difference of the centers of motion of the pendulum and pallets, the pin, D, as it describes a smalle circle than the arc, F, soon escapes from it, leaving the pendulum entirely detached from the clock. Returning, the same operation is repeated on the other side. The locking surfaces of both pallets should be a very little under cut, to insure perfect freedom of the pins, D and E, from contact with the upper surface of the arc, F G, after the escapement has taken place. The different parts are so arranged that the escapement of the wheel and pallets, and that of the pendulum and guide, are made at the same instant.

A turret clock (built by J. R. Brown & Sharpe, in 1853, for the State of Rhode Island, and put up in the State House, at Newport,) with a two-seconds pendulum, whole length 13 ft. 5 in., has this detached escapement applied to it. The pendulum escapes from the pins, D and E, in 45 minutes of arc, or with two inches motion at its lower extremity. It vibrates 3° 54′ with 28 lbs. falling 4¼ inches per hour, which is 5½ times the angle of escapement. The friction of the train is 7 lbs.: 10¼ lbs. falling 4¼ in. per hour will cause the pendulum to vibrate 56′, or 11′ more than is necessary to escape it. These observations were made before the outside dial work was applied; the distance from A to C, in this clock, is 10 inches, from C to D 5 inches, and from D to E, 4¾ inches. Graham's dead beat or anchor escapement was used in this clock; concerning its performance, Job B. Wilbour, Esq., a watchmaker long resident in Newport, writes under date of Dec. 28, 1854: "Our clock performs most admirably; since I last saw you, which I think was about the 1st of Nov., it has been running on mean time, notwithstanding the changes of temperature, and have no doubt it will continue to do so. I think it the most perfect time-piece in New England, and see no way to improve any part of the machinery."

The advantages of this detachment of this pendulum may be summed up as follows:

First, the pendulum is entirely disconnected from the clock, except at the moment of unlocking and impulse.

Second, the time occupied in giving impulse to the pendulum is much less than in the ordinary construction, by reason of the difference in the distance of the centers of motion of the pendulum and pallets from the place of action of the pins in the guide upon the pendulum, and by the great length of the arc, F G.

Third, the sliding of the locking surfaces of the pallets, against the ends of the teeth of the escape wheel, which occurs at every vibration in ordinary clocks, when the motion of the pendulum is any more than sufficient to escape it, is entirely prevented.

Fourth, the friction of the fork of the guide upon the pendulum rod, which takes place in common clocks when the centers of motion of the pallets and pendulum, are not in the same line, is nearly obviated.

Fifth, owing to the difference in the distances of the centers of motion of the pallets and pendulum, from the point at which the impulse is given, but about one-third of the motive power that would be required were they in the same line, is here needed.

Sixth, the teeth of the escape wheel can be made much shorter, and therefore lighter, as there is not so much strength required, which allows the escapement to be made with less drop, and thus effects a saving in motive powar.

Seventh, the escapement is not liable to injury from any increase of motion which may accidentally or otherwise be given to the pendulum.

This escapement in the arrangement of the pallets and fork is somewhat like the lever escapement used in watches. The fork is, however, much wider in the former than in the latter, and there is also a great difference in the arcs of escapement of the pendulum and pallets in the clock, compared with those of the balance and pallets in the watch. Jurgensen, one of the best writers upon Horology, gives for the escapement of the clock pallets two degrees, for the watch pallets five degrees, and for the balance from the fork, twenty degrees. In the Newport clock the pallets escape in 2¼ degrees, and the pendulum in ¼ of a degree, allowance being made for drop. The angle of escapement of the pendulum can be reduced still further by shortening the distance, C D, or lengthening A C or D E. In an astronomical clock this might be desirable.

It is an established principle in clock-making that a long pendulum vibrating small arcs is best adapted for correct time-keeping, but nothing is more common than to see this entirely disregarded. As an example, the clock in the tower of the U. S. Arsenal, at Springfield, Mass., has a second's penduldm, 39·2 inches, the ball of which vibrates about 20 inches! L. S.

Providence, R. I., Jan., 1855.

[Messrs. Joseph R. Brown & Lucian Sharpe, No. 115 South Main street, Providence, R. I., are manufacturers of these movements, to whom address for further information.

Copper Ores.

A correspondent, P. C. Loveland, of Etowah, Cass Co., Ga., states that extensive copper ores exist in the vicinity where he resides, and that a fortune there could be made by a person or persons with capital, who understood the business.

The waters of the Upper Sacramento are teeming with the finest salmon, which are caught and carried to San Francisco, where they are sold at three cents per pound. So plenty are they that many spoil and are thrown away before being sold.

A tree weighing 700 pounds will absorb 15 pounds of water in six hours.

Boat Guards.

A bill is now before the New York Legislature to compel all ferry companies to employ guard rails, operated in such a manner that persons will be prevented from attempting to jump on board after the boat has left, and from jumping ashore before the boat has struck the dock. A number of persons are drowned in this city every year, in attempting to jump on board boats after they have left their docks; this bill is intended to prevent such accidents.

LITERARY NOTICES.

AUTOBIOGRAPHY OF P. T. BARNUM—We have just received a copy of this famous work from the publisher, J. S. Redfield, and as it has been very generally noticed in the public press, it is scarcely necessary to say, much of it by way of review. The author has passed through almost every shade and vicissitude of life, and is qualified by experience to pour a flood of light upon the numerous schemes and tricks which are always in full blast to "take in" the public. A good deal of discussion has taken ptace in the newspaper as to whether Barnum's Life is calculated to do good or injury; be this as it may, the life of such a character must of necessity afford interest to a very numerous class of readers, and we understand the work is having an extensive run.

THE PRINCETON REVIEW—The first number of this excellent religious and scholarly Quarterly, for 1855, contains a very beautiful memoir of the late Dr. Archibald Alexander. A very fine essay on recent works on Mental Philosophy, deserves to be read by every student. This Review is furnished to Theological students at $2,25 per year, being only two-thirds of the subscription price. The office of publication is 265 Chesnut st., Philadelphia. The venerable Prof. Hodge, D. D., of Princeton College, is Editor.

THE NAUTICAL MAGAZINE—This excellent monthly magaziue, by Griffiths & Bates, 79 John street, in its last number contains a fine article on the durability of and season for cutting ship timber, and in another it advocates the life boat principle applied to ships.

THE COACHMAKER'S MAGAZINE—The February number of this useful illustrated magazine, by C. W. Saladee, Columbus, Ohio, contains two sheets of drawings of fashionable and improved carriages. This work should receive the patronage of all the carriage-makers in our country.

PUTNAM'S MONTHLY—This able and solid magazine for this month contains a fine steel plate of Richard B. Kimball, author of Cuba. The first article is on the Diplomacy of Cannon Balls, and consists of a review of the present state of Europe, and the spirit of the different governments. It is a profound, fair, and manly essay. This magazine is entirely original, is a credit to the literature of our country, and its enterprising publishers, G. P. Putnam & Co., No. 10 Park Place, this city.

"The Medicinal, Poisonous, and Dietetic Properties of the Cryptogamic Plants of the United States," is the title of a large well printed pamphlet of more than 100 pages, by Francis Peyre Porcher, M. D., of Charleston, S. C., so well known for his scientific qualifications, being a report made to the American Medical Association. It is replete with useful information; no physician can well do without it; it does great credit to the industry and learning of its author, to whom we tender our thanks for a copy.

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